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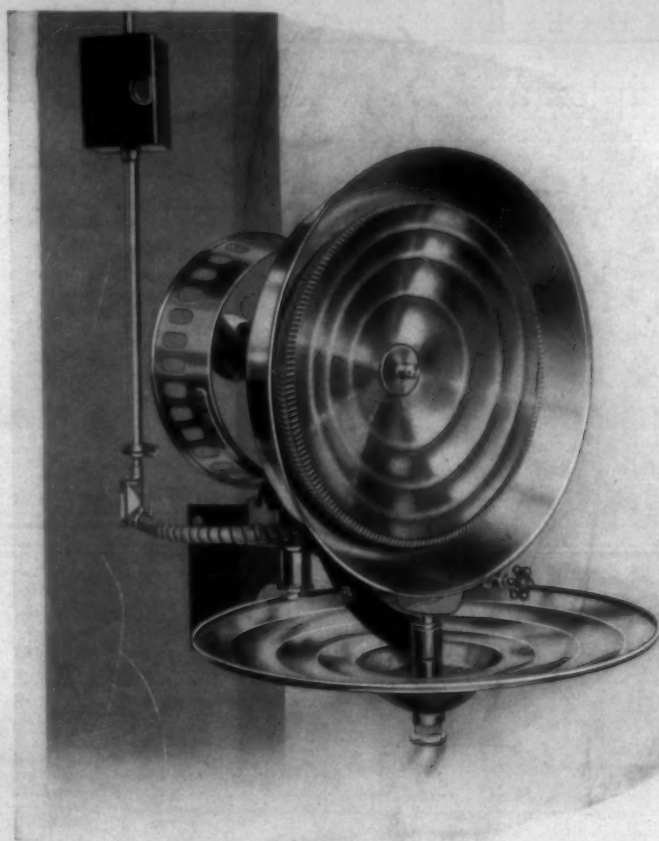
*Commerce*

# SOUTHERN TEXTILE BULLETIN

VOL. 29

CHARLOTTE, N. C., THURSDAY, FEBRUARY 18, 1926

NUMBER 25



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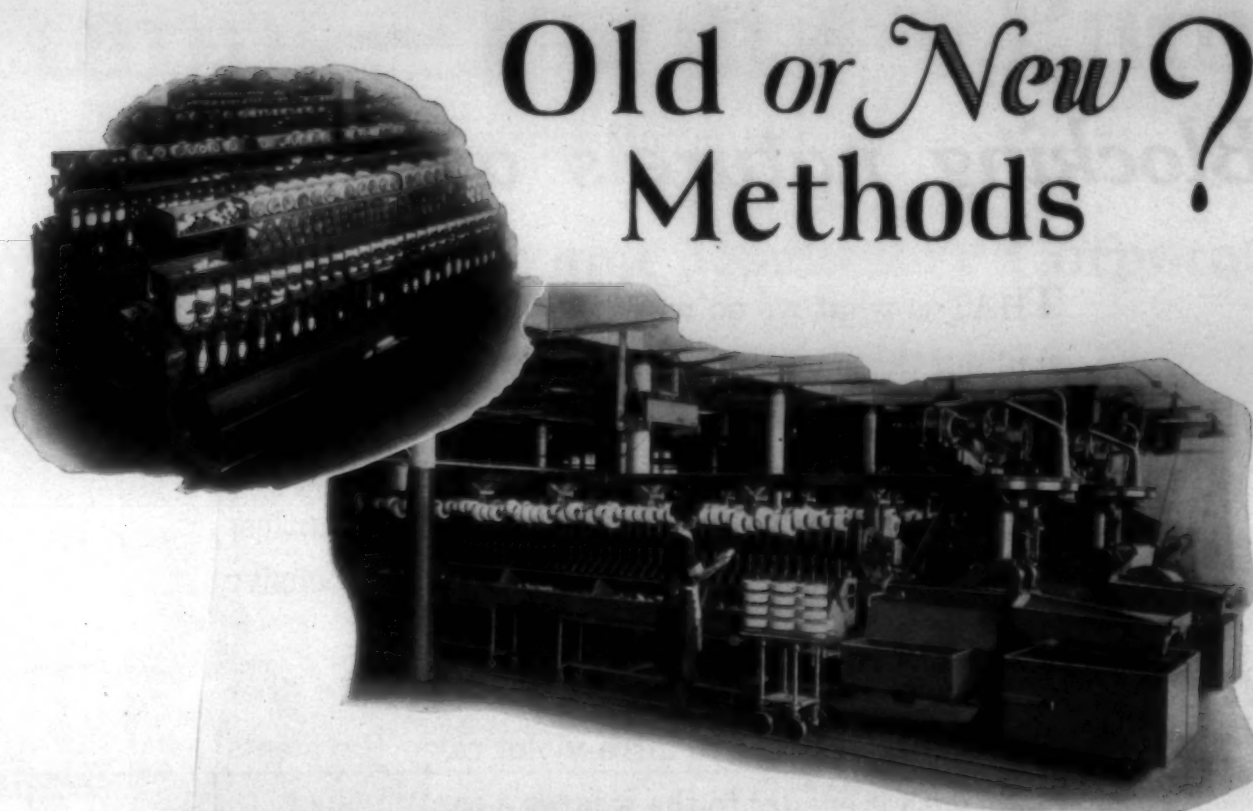
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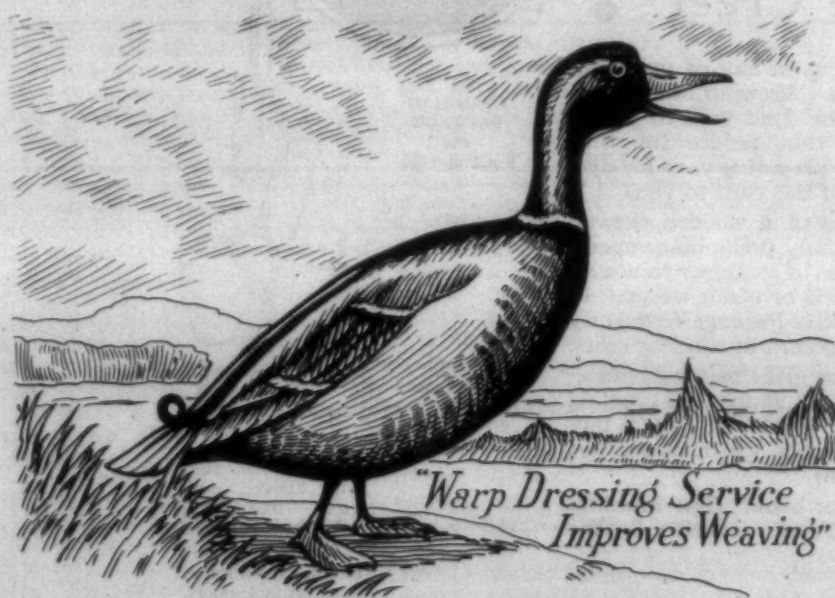
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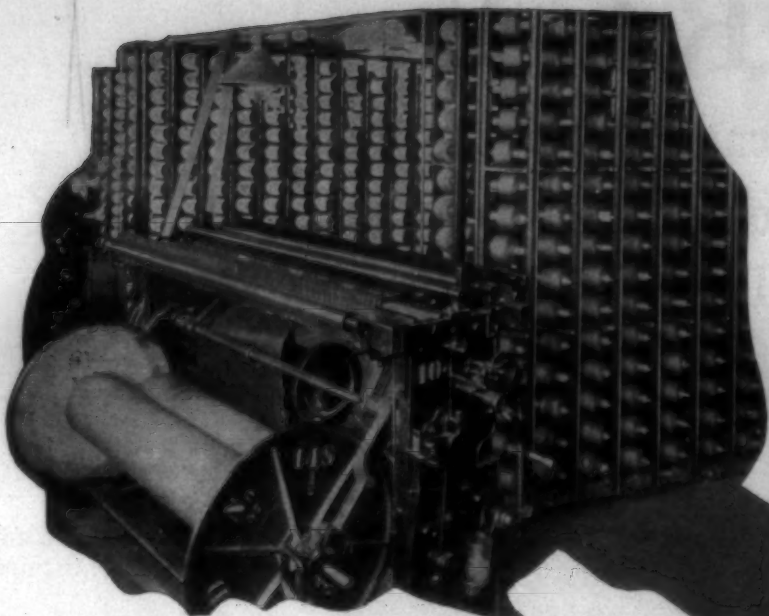
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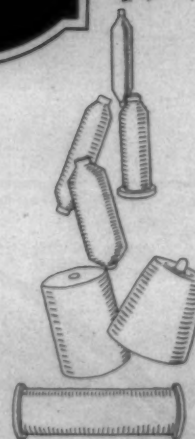
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# SOUTHERN TEXTILE BULLETIN

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## *Maintainance of Proper Relations Between Employers and Employees*

ABOUT two generations ago, the manufacturing industry was made up of small units each with an individual proprietor who knew all parts of the business intimately and had personal contact with all his employees. The rapid development of and improvement in the steam engine, and later the application of electricity for supplying power, light and heat, have enabled manufacturing industries to grow and expand into larger and larger establishments until today, hundreds of thousands of people are employed by a single company where formerly only hundreds or sometimes thousands were employed. These large industrial units—usually in the form of stock companies or corporations—require a well organized body of employees led by one executive, who, because of the size and nature of the organization, is far removed from the workmen so-called, that is, the men who more work with their hands than with their heads. These workmen are by far the largest group of people employed in any industry and their proper management is one of the most greatest and most difficult problems of manufacturing—a problem to the solution of which more study and effort is now being directed than to any other single problem in industry.

I have referred to the very large industrial establishments today and the number of workers employed by them. It is a fact, however, that notwithstanding the existence of these large industrial companies, less than one-third of the wage earners in the country are employed in them, and they themselves, in the aggregate comprise but one per cent of the total number of manufacturers. These facts should be remembered if a correct perspective of the situation is to be had; but that there is a distinct trend toward larger industrial companies is undeniable and a consideration of the effect of this change upon the workers is therefore important.

In the early stages of growth of these large manufacturing units, as the responsible manager was unable to have personal contact with the workmen, they were often dealt with rather arbitrarily, causing them to feel the need for an organization among themselves by means of which they could cope with the employing organization, or as it is usually called "The Management." In

Address by S. M. Herr, President Westinghouse Electric and Manufacturing Company, before Yale Divinity School and New Haven Industrial Relations Council.

forming their organizations, the workmen not only included the employees of a single company, but brought into it all the workmen of a similar craft, regardless of their location. This constituted a Union, and thus we have the Machinists' Union, the Carpenters' Union, the Miners' Union, etc.

Owing largely to lack of contact with the really responsible officers and to the absence, to a greater or less extent, of co-operative effort until rather recently, between management and men, there were frequent clashes, which too often resulted in strikes or lockouts. About ten years ago, progressive managers began making an effort to get into closer contact with their workmen and to this end encouraged the formation of committees of workmen in each manufacturing plant, who could meet jointly with the foremen and other executives and discuss matters of mutual interest. Through these meetings each obtained a broader and more correct view of the other's problems and conditions and they were thus enabled to reach agreements which would otherwise have been impossible.

In England this co-operative contact between the workers and the management has not been developed, due probably to the different relation of the workmen as a class to the employers. This class consciousness has resulted in a much more complete development of the labor unions of that country. Their rules require that all matters in dispute between employer and employee be handled by representatives of the union, thus compelling the workmen in an industrial establishment to bring their complaints and desires to their employer's notice through third parties instead of directly through their own committees, as is largely the practice here. The greater possibility of co-operation between employer and employees and the better understanding which this co-operation produces are only some of the advantages which accrue to both and consequently to the consuming public, for which, in the last analysis, all industrial effort is made.

In a recent address Mr. Herbert Hoover said, when speaking on the subject of "Elimination of Industri-

al Waste in Its Relation to Labor"—"It is idle to argue that there are at times no conflict of interest between the employee and the employer. But there are wide areas of activity in which their interest should coincide and it is the part of statesmanship on both sides to organize this identity of interest in order to limit the area of conflict."

A great deal has already been accomplished along the lines suggested by Mr. Hoover, by encouraging the formation of Joint Conference Committees in various industries, as stated above. The number of such Committees or Workers' Council reported in operation has increased from about 200 in 1919 to over 1,800 in 1924, affecting a million and a quarter workers, or about one-tenth of those employed in manufacturing industries. These committees are elected by ballot by the workmen in such a way as to make them representative bodies; that is, each elect-member of a Joint Conference Committee represents a group or a certain number of employees and these members are elected at regular intervals, usually annually, so that they at all times are the real choice of the employees they represent. I have called them members of a "Joint Conference Committee" because that is the name usually given to such a body, and also because it fairly well expresses the character of the organization. The group of employees elected by the workmen joins a group of employees appointed by the responsible officials of the company, usually composed of foremen, assistant foremen, chief clerks, storekeepers, and other minor officials, with whom the representatives of the workmen contact in their daily duties and with whom they are more or less acquainted. The representatives of the management sit with the representatives elected by the workmen and together form the Joint Conference Committee.

Speaking now more particularly of the Joint Conference Committee of the Westinghouse Electric and Manufacturing Company, which is fairly representative of similar organizations in other companies, this committee is called together at regular intervals of one or two months by the Works Manager, who gener-

ally presides at the meetings. In order to avoid any feeling among the members that the proceedings of the committee are not correctly nor fairly expressed in the minutes, two secretaries are appointed, one elected by the representatives of the men, the other by the appointees of the management. These two secretaries, both of whom are stenographers, carefully compare their notes of the proceedings of each meeting and no permanent record is made until it is signed jointly by both secretaries. The entire minutes of each meeting are then published in the next issue of the "Shop News," a paper in which are recorded the local happenings among the employees as well as interesting items regarding the activities of the company. The "Shop News" is edited and printed by the company's publication department and the entire expense is borne by the company. It is distributed without charge to the employees, each receiving a copy.

Does this Joint Conference Committee fairly replace the former personal contact between the responsible head of the business and the employees working under his direction? Before attempting to answer this question, it should be understood that a modern manufacturing industry is no longer owned in a large measure by those responsible for its management, as was the case of a generation or two ago. The ownership of a modern industry is now spread among many thousands of stockholders—in the case of two of the largest corporations, the number of stockholders has increased in the last twenty years from less than ten thousand to over three hundred thousand. It is becoming increasingly true, therefore, that in the case of our most important industries no large amount of stock is in the hands of any one individual or even any cohesive group of individuals. As a result, the officers are not only controlled by any dominating owner or group of owners, but no one man or small group owns or represents a controlling interest in the company, with whom the officers can properly confer in order to be guided as to its policies. This condition places a very heavy responsibility upon the Board of Directors and principal officers of such companies. From a legal standpoint, this responsibility is to the stockholders only, but it must not be viewed too

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# Washing Colored Goods

THE tendency of both the dyestuff maker and the textile manufacturer is generally towards the production of better and faster colors, and the last two decades have witnessed a remarkable improvement in the nature of dyestuffs used for the ornamentation of textiles. At the same time, it must be said that the bulk of the colors at present in use are of only moderate fastness.

The introduction of vat dyestuffs and other fast colors of recent years has led to the extensive sale of colored garments, which are sold under the guarantee is provisional, the manufacturer stating the conditions under which the garment must be washed, and making special reference to the necessity of avoiding the use of bleaching agents.

## Cotton Goods.

As far as cotton goods are concerned, those sold under this guarantee are comparatively easy to handle in the laundry, providing it is borne in mind that the term fastness is only a matter of degree, and that no color is absolutely fast. It is a fact that some colors in this group very nearly approach absolute fastness and quite a wide range of shades can be formed these colors, but the enormous variety of shades demanded by the buying public today makes it necessary to introduce colors outside this range, which, while they are recognized as fast colors, are by no means equal to the fastest group. With ordinary treatment in the laundry these colors, however, prove quite satisfactory, but show up very inferiorly by comparison when subjected to more severe treatment.

It is essential to take care when washing garments dyed with fast colors if the most satisfactory results are to be obtained. Thus the use of an excessive amount of alkali combined with high temperature may in certain cases have a deleterious effect on the color, although the fastest dyes in the group are remarkably resistant to the action of boiling soap and alkaline solutions. To ensure uniformly successful results it is advisable strictly to limit the action of the alkaline scouring liquors, and to use methods as gentle as possible for the cleansing of the garment.

## Conditions of Fastness.

The fastness of this class of color lies in the fact that the dyestuffs are insoluble in boiling soap and alkaline liquors. It is possible, however, for these colors to mark off and stain some portion of the same or other garments. This may be caused in a variety of ways. It may be due to the presence of loose color which has remained on the fibre after dyeing; secondly, it may be due to the effect of the garment being subjected in the wet state to the weight of a heavy batch of goods for some considerable time; and lastly, it may be the result of a chemical action in the alkaline wash waters whereby the color is rendered soluble and is actually dyed where it has marked off. Where the marking is caused by the presence of loose

(Paper by J. E. Shaw before the National Federation of Launderers, England.

color, it can be cleared in a subsequent wash, but where the color stain is actually dyed it is almost impossible to remove it.

In all dyeing operations it is essential that the coloring matter is in solution, and in the case of vat colors this is brought about by the use of a reducing agent in the presence of alkali, the bath in general use being hydrosulphite in caustic soda. Dyestuffs of the vat series are soluble in the reagent and cotton has the power of absorbing and fixing the coloring matter in its reduced state from the solution. The dyestuff is finally fixed by the removal of the solvent and oxidation of the coloring matter back to its original form. Vat colors fixed on cotton in this way are insoluble in boiling water, boiling soap solutions and in a varying degree to boiling alkaline solutions.

I mentioned at the commencement that the dyestuffs and textile manufacturers have improved the quality of their manufactures, and it is not less a fact that the launderer during the same period has improved on the older methods of washing, and today, generally speaking, words on more scientific lines. Quite recently the British Launderers Research Association published a book on "The Control of Laundry Operations." In this book there is a chapter devoted to the washing of cotton and linen goods, concluding with an article on colored goods and the washing of colored goods. If you follow out the recommendation given in the chapter, the washing of the class of colored goods I have already mentioned will present no difficulty.

## Developed Goods.

A second class of fast colors are dyed in an entirely different manner and are known as developed colors. The color in this case is made and fixed in the fibre during the dyeing operation. Cotton is impregnated with a beta naphthol solution, and after the removal of the excess of naphthol the cotton is passed through a diazo solution of an organic sort capable of forming an insoluble coloring matter. In this way the coloring matter is produced and fixed in the fibre. The shades produced by this method are chiefly various tones of red, orange, and yellow.

Aniline black is another example of a color being produced and dyed at the same time.

Turkey red is the best example of a fast mordant color and is obtained by the fixing of an oil alumina of alizarine.

Fast colors of another type are obtained by the production of mineral pigments in the fibre. The best example in this class is the khaki dyed on cotton, which consists of mixture of oxides of metals in the fibre. The best of these consists of mixture of oxides of iron and

chrome, varying according to the shades required. Mordant colors and colors produced in the fibre, unless very well dyed, are liable to rub and bleed in the washing process. This is caused by part of the color being loosely fixed on the fibre instead of in the fibre. White grounds stained by loose color of this type can be easily cleared by subsequent washing in a clean soap solution.

## Colors Which Present Trouble.

The above types of fast colors are found in cotton goods of good quality which are likely to be sent to the laundry for frequent treatment; of these, such goods as shirtings, zephyrs, poplins, gingham, and nowadays, even flannelettes, may be mentioned. For inferior cloths of this kind and for other types of materials, which are not expected to be washed to any great extent, far inferior colors are generally used, which are of only moderate fastness, and are severe washing, not to mention boiling, rapidly leads to their fading or bleeding.

It is this class of color which presents some trouble to the launderer, and it must be admitted that little information in the matter can be given, save that already mentioned, namely, to give the garments and materials as gentle treatment as possible for their satisfactory cleansing.

It may be asked for what reason all colored goods are not dyed with the fastest types of dyestuffs. One answer is perhaps the obvious one, that the expense of fast colors in certain styles is practically prohibitive, except for the best quality of materials. Vat colors in particular, while of very high price, are of excessively low coloring value. Also, they call for more skilled attention and require more manipulation, which adds to the general cost. Further, under the most perfect conditions they offer considerable difficulties in the way of good penetration and of level dyeing. The range of fast shades is also rather limited, vat colors particularly being deficient in brilliance and solidity.

At present the quantity of vat color available is not sufficient to replace to any great extent the cheaper qualities of color, and it is doubtful whether the raw material from which these dyestuffs are manufactured could be obtained in unlimited quantities.

## Colors of Ordinary Fastness.

Of ordinary colors the sulphur colors deserve special mention, since they are of quite good fastness, the best being equal to some of the members of the fastest class. The sulphur colors, however, are deficient in fastness to oxidizing agents and especially to chlorine or chemic, but provided they are not subjected to these reagents (which in fact should have no place in the washing of colored goods) they can almost

be classed with the fast colors, and do not lead to trouble in the laundry. Being comparatively cheap and possessing considerable coloring power the sulphur colors are most largely used for the production of dark shades of satisfactory fastness to washing. The range of shades which can be dyed with sulphur colors is limited to yellows, browns, greens, blues and blacks.

By far the most commonly used colors in dyeing are the direct cotton colors which are soluble in water and therefore easy of application. The dyeing process merely consists of immersing the material in the water solution of the color when the cotton becomes more or less permanently dyed. While varying somewhat in fastness the direct colors, as a class, are of poor fastness to washing, especially in dark shades, and easily run or bleed.

Garments so dyed, therefore, are very liable to stain others with which they are in contact.

## Bleeding of Direct Colors.

Unlike a loose color derived from fast colors, the bleeding from direct colors cannot be removed easily, but when used for pale shades only, the defect of bleeding is almost negligible, and for this purpose the colors are more or less satisfactory. The use of salt in the breakdown is often recommended, and helps to prevent this bleeding of direct colors, its action being to prevent the solution of the dyestuff and, therefore, minimizes the risk of bleeding. For salt to serve any useful purpose, however, much more is required than is usually recommended.

Various fixing agents have been recommended to improve the washing properties of direct colors, but none can be said to have been very successful with the exception of formaldehyde, which forms an insoluble compound with a few of the direct dyestuffs.

A more generally satisfactory method of improving the fastness to washing has, in the case of suitable colors, proved to be diazotizing and developing. This process is found to be most useful for the production of dark blues and blacks.

Of all coloring matters applicable to cotton the basic colors produce the brightest and fullest effects. Although generally fugitive in character the basic colors are fairly fast to soap in the absence of alkali, and if carefully washed at a low temperature will withstand a good number of washings. These dyestuffs are not dyed direct, but are fixed on the fibre as insoluble colors by means of tannic acid and other phenolic compounds.

With tannic acid it is essential to fix the dyestuffs by means of certain inorganic salts, of which tartar emetic is the best. On the whole, the basic colors are very fugitive to light and atmospheric influences, and as in the case of other colors may have faded before reaching the hands of the launderer. It may be mentioned here that colors which

(Continued on Page 12)





This plant of the Atwater Kent Mfg. Co., at Philadelphia, famous makers of Radio and other electrical apparatus, covers a ground area of more than 20 acres.



Interior view of the huge Atwater Kent plant. Walls and ceilings have been given long-lasting, lustrous whiteness by painting with Barreled Sunlight—washable as tile.

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# Importance of Temperature in Dyeing

IT is coming to be more and more clearly understood that temperature plays a large part in successful dyeing. It may be of especial value to call attention here to some items of information upon this subject, since, at the present time, certain manufacturers are becoming alert to the possibilities in the textile industry of applying successful apparatus designed to indicate and control temperatures.

Oftentimes, it is desirable to use more than one dyestuff in a single dye-bath. Naturally, the two dyes will be exposed to the same temperatures and will, in general, act conjointly on the fiber at the same temperatures.

Now it so happens that individual dyes have their individual temperatures at which they most effectively exert their tinctorial properties. When two or more are simultaneously put to work upon the fiber, the chances are that, at no stage of the dye operation, are they both working to the best advantage. Consequently, if we select temperature for the dyeing operation, it is unlikely that we will know the proper amounts of the two dyestuffs to combine for the purpose of producing the shade wanted. If we select the temperature known to be best for dye B. Are we to use more of B to offset the disadvantage of using it at a temperature when its tinctorial power is at less than its maximum?

If we decide on this course, the next question is, how much more of B are we to use? And this is where we are liable to go wrong. We are apt to choose an incorrect amount.

If, however, we are willing to experiment a little, we can probably determine, for the particular dyes A and B, and for the particular temperature X, just what proportions to employ to produce the wanted shade.

The matter is, however, complicated still further by the time factor. Up to a certain point, a given dye generally deepens its shade on the fiber as the time is prolonged, other things being kept the same.

A writer some years ago wrote: "It is well known to most dyers that dyes of one and the same chemical group have a different affinity for the same fibre at the same temperature. If one of the dyes goes on the fibre more rapidly and effectively than its companion, the result is a considerably different shade. To overcome this, the dyer modifies the temperature, usually raising it so that the remaining dye may be taken up from this dye-bath as a general rule it becomes a matter of difficulty for the dyer to color uniformly successive lots of goods, working in this way."

Attention has been called to the fact that many dyestuffs do not require a boiling temperature and that satisfactory results may be obtained in the range of 190°-205° F. It has

also been pointed out that excessive temperatures used with Basic Dyes tend to destroy or cause deterioration of the coloring matter. It is in effect recommended that the temperature for these dyestuffs be held within a narrow range, say, 140°-160° F. The average may be taken as a good standard temperature to use, until experience of the behavior of the particular dyestuffs make it seem desirable to revise it. That is, 150° F. is a good first guess. Let experience decide in particular cases.

## The Temperature When Topping

### with Basic Dyes.

Basic Dyestuffs are, at times, employed for the purpose of topping dyeings accomplished with other dyes. This may often be done in the presence of a small amount of acetic acid. It is recommended that, subsequently to the addition of all the Basic Dye, the temperature be raised somewhat, but that it be not permitted to rise above 175°.

### Loss of Brilliancy.

It has been pointed out, by L. J. Matos, that many dyes suffer in respect to brilliancy if left in the boiling dye-bath for an indefinite period; but that these same dyes will suffer no appreciable loss of brilliancy when used at their proper temperatures.

There are a number of Vat Dyes which perform their service best at quite moderate temperatures—the reading 120° F. being given as an instance in this connection.

## The Padding Machine and Temperature.

When the padding machine is employed, we are to expect that a reduction in temperature will occur. If we are dyeing with a combination of dyes, this alternation in temperature is more or less likely to break up the combination of conditions that has been producing the desired shade. That is, when the temperature falls off, the several affinities of the various dyes are not especially likely to change in the same degree, the results being an alternation in the shade.

It ought not to be difficult to infer from the foregoing examples and statements of fact that temperature does indeed play an exceedingly important part in dyeing, especially when a mixture of dyestuffs is employed. The usefulness of temperature apparatus in attempting to overcome difficulties centers largely upon the fact that with them we are able to determine the temperatures at which we obtain successes, and that thus we lay the foundation for repetitions of the successes, once we make them.—Textile Colorist.

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For sizing Rayon warps in skein or on slasher. A perfect binding and strengthening agent for Rayon. Reduces breakage during weaving and increases winding efficiency.

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### Washing Colored Goods

(Continued from Page 8)

have been caused to fade by some other means than washing very often appear much more faded after washing than before.

#### Mercerizing Goods.

The fastness to washing of all classes of color dyed on cotton is very much improved by the process of mercerizing the cotton before dyeing. Mercerizing consists of giving cotton (either yarn or piece) a treatment with a cold, strong solution of caustic soda. Under this treatment cotton shrinks and becomes more transparent, but if this shrinkage is prevented, and the caustic removed by washing while the material is under tension, then a certain degree of lustre is given to the cotton which still retains its power of fixing dyestuffs.

For certain styles of colored work on cotton really quite unsuitable dyestuffs are used which have little or no affinity for the fibre. These are the acid wool colors and are used to obtain effects which cannot be obtained in any other suitable way. Goods so dyed are never intended to reach the laundry, and if subjected to any washing treatment it is impossible to preserve the color to any extent. A more serious matter is that the color may cause a considerable amount of damage to other goods.

Having dwelt as fully as I am able here on the nature of the dyestuffs used for the dyeing of cotton and the manner of their application, it is convenient at this point to mention the different methods used for the manufacture of colored cotton goods.

First may be mentioned the weaving of colored yarns with bleached yarns with the object of producing suitable designs on a white ground. This method is largely used in the manufacture of colored striped shirtings, ginghams, zephyrs and flannelettes.

Similar effects are obtained by weaving colored yarn with grey cotton, the cloth being afterwards bleached in the piece, suitable dyestuffs having been selected which are able to withstand a modified process of bleaching. This style has been very popular of recent years and owes its success to the introduction of vat dyes and other fast colors. These cloths are largely used for the manufacture of garments of guaranteed fastness to washing.

For the production of speckled effects in flannelettes with the object of imitating the appearance of woolen mixtures, cotton yarn is printed in the hank form, and having been suitably processed is woven up as warp threads. Very effective results are obtained in this way.

In a similar manner cotton warps are sometimes printed for the production of shadow effects in upholstery and tapestries.

#### Calico Printing—A Classification.

For some cloths colored yarns are used for the production of solid shades, and shot effects are obtained by the use of different colored yarns in warp and weft.

The effects produced by the weaving of colored yarns are imitated more or less successfully by the method of printing dyestuffs on piece goods. Printing is used for the coloring of all materials, but chiefly for cotton—calico printing. The results obtained in this way are somewhat inferior, both in appearance and quality, to those obtained by the weaving of colored yarns, but at the same time effects can be produced which cannot be obtained by any other means.

There are numerous styles of calico printing, but they can conveniently be classed into:

(1) Direct printing, which, as its name implies, consists of printing the color direct on the cloth, its fixation being afterwards accomplished by means of steaming.

(2) Discharge printing, whereby a plain or printed shade is destroyed locally according to the patterns, white and colored effects being thus obtained.

(3) Resist printing, in which a suitable substance is printed on the cloth, which is afterwards dyed or overprinted direct, similar effects being obtained as in the discharge style.

(4) Dyed style. In this process mordants are printed on the cloth, which is afterwards dyed, a suitable dyestuff being selected whereby the color is only produced where the mordant is fixed.

For self shades the majority of cloths are dyed in the piece. This is the most extensively used method of dyeing, largely on account of the cheapness and ease of production. All the methods of dyeing hitherto explained are used for piece dyeing, and in recent years the fast series of color have been successfully applied in this way.

The introduction of artificial silk and particularly acetyl silk has led to the introduction of many novel effects in piece dyeing. Thus, by selecting suitable dyestuffs, union materials of acetyl silk and cotton can be dyed two shades, so giving shot and other effects.

To return to the question of washing colored goods, it is well to point out that cotton is a very resistant substance and is not easily acted upon by chemical reagents. Thus it is not detrimentally affected by alkaline scouring agents, and for this reason colored cotton goods and cotton goods generally are expected to withstand more severe treatment than materials made from other fibres.

Wool and silk, for example, are very seriously affected by a too severe washing, and goods made from these materials are everywhere treated very differently from those made of cotton. For this reason it is imperative in the case of cotton goods of high quality to use dyestuffs of excellent fastness, and it may be said of the best and fastest colors of today, that if reasonably treated, they are equally or more resistant to washing than cotton itself.

In the case of woolen or silk washing fabrics it is not difficult to dye these materials with colors of sufficient fastness to easily withstand the comparatively mild treat-

(Continued on Page 44)



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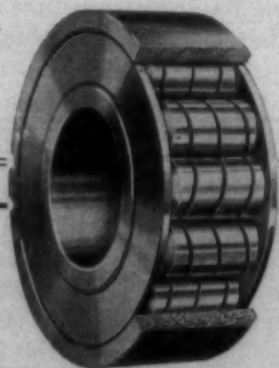
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## Lack of Lubrication

# FIRST!

in causes of machinery failure

**I**N 1924, the McGraw Hill Company, publishers, sent out a questionnaire to 2500 manufacturers throughout the United States, seeking facts on the causes of failure of machinery. Replies from 516 were received; 274 graded points in their order of importance.

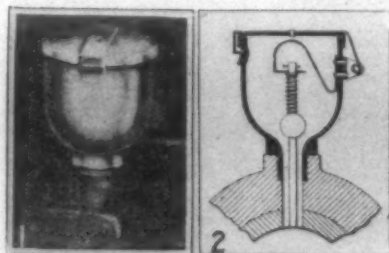
"Lack of Lubrication" was mentioned the most number of times. Eighty companies stated that this was the *biggest* cause of the failure of machinery. "Faulty Design," which ranks next, received but forty-seven votes.

"Improper Adjustment of Bearings" was mentioned by eighty-two concerns as the second most important cause of machinery failure. Even in this grading, "Lack of Lubrication" came next with sixty-two votes.

Instead of grading replies, thirty-six companies gave percentages to indicate causes of machinery failure. The chief cause again was shown to be "Lack of Lubrication."

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## Cotton Mill Processes and Calculations

By D. A. Tompkins.

Copy Revised for Third Edition.

(Continued from Feb. 4)

258. Shuttles are designated as right or left hand, according to whether the eye is on right or left side of shuttle, looking at it right side up with hinge of tongue toward you. There is some difference of opinion as to what constitutes the hand of a shuttle, but the above seems to be the most logical and to receive the sanction of the best authorities. The eye is always put on the side of shuttle away from that intended to run against the reed.

The hand of a loom is determined, as in the case of other machines, by standing in front, at breast beam, and noting whether driving pulley is on right or left.

259. There are certain little usages in weaving, as to whether this or that motion shall work first from left or first from right, etc. Considered abstractly, most of these rules are immaterial, but taken all together, they form a necessary system for acquiring skill in weaving, and for producing uniform results. Such a rule is that mentioned in (245) requiring left hand treadle to be attached to front harness. Another such rule is that shuttle shall be placed in the loom with its hinge end toward loom pulley. Some weavers claim that this is done because shuttle is thrown strongest from that side of loom, and that therefore the heaviest end of shuttle should be on that side. But this is not a correct theory. The shuttle may be thrown strongest from either side of loom, according to the adjustment of picker cams, as explained in (255).

For the best results in weaving, the shuttle should be placed in the loom in such a way that the filling will come out of shuttle in front, that is, next to the breast beam. When this is done on a right hand loom, and the hinge end of shuttle is toward driving pulley, the eye will be on the left. Therefore left hand shuttles are required for right hand looms, and right hand shuttles for left hand looms.

### Reedy Cloth.

260. Referring to Fig. 49, the line of warp from whip roll to breast beam seems to swerve down. The height of whip roll is adjustable. The height of breast beam may also be varied by fastening a thicker or thinner strip on the top, where cloth passes over. Most cloth is woven with the line of warp as shown, for the reason that in this position, the top shed of warp is slacker than the bottom, and it may be more evenly beaten up, giving a better "cover" to the cloth.

As two warp threads pass through each dent in the reed (plain weaving) and in shedding, one of these is up while the other is down, it can be seen that if both threads, the one up and the one down is pulled equally taut, they will be held close together while reed is beating up the filling. But if the lower shade is pulled down harder than upper shade is pulled up then the lower shade will be held tight while the upper shade is comparatively slack. In this condition when the filling is beat up, the bending of the filling threads push the comparatively loose warp threads in the upper shade to positions halfway between the taut threads of the lower shade.

261. Two or more warp threads are drawn through one dent of reed, and hence the tendency in cloth is to have the warp threads grouped together, according to the way they

(Continued on Page 18)



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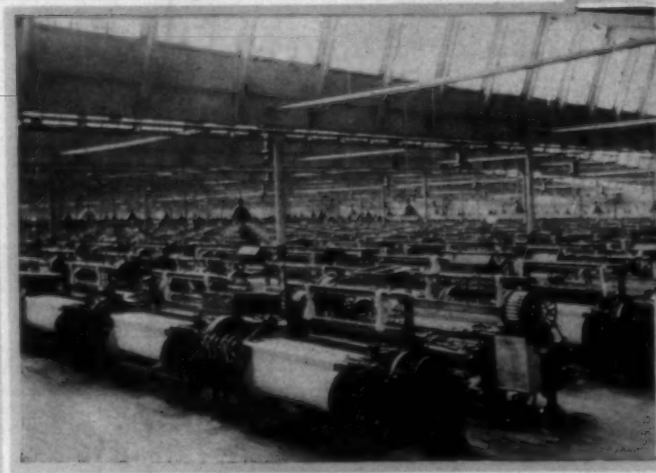
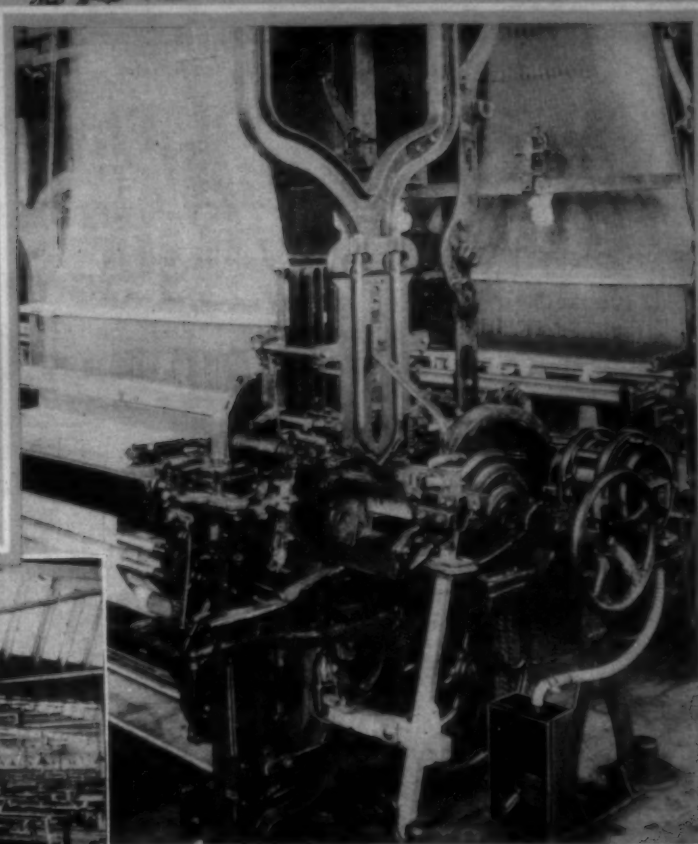
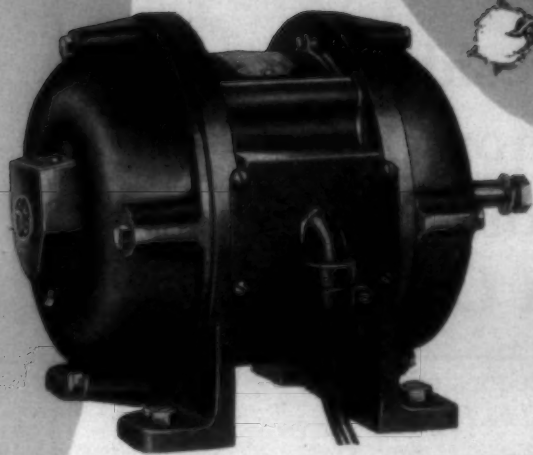
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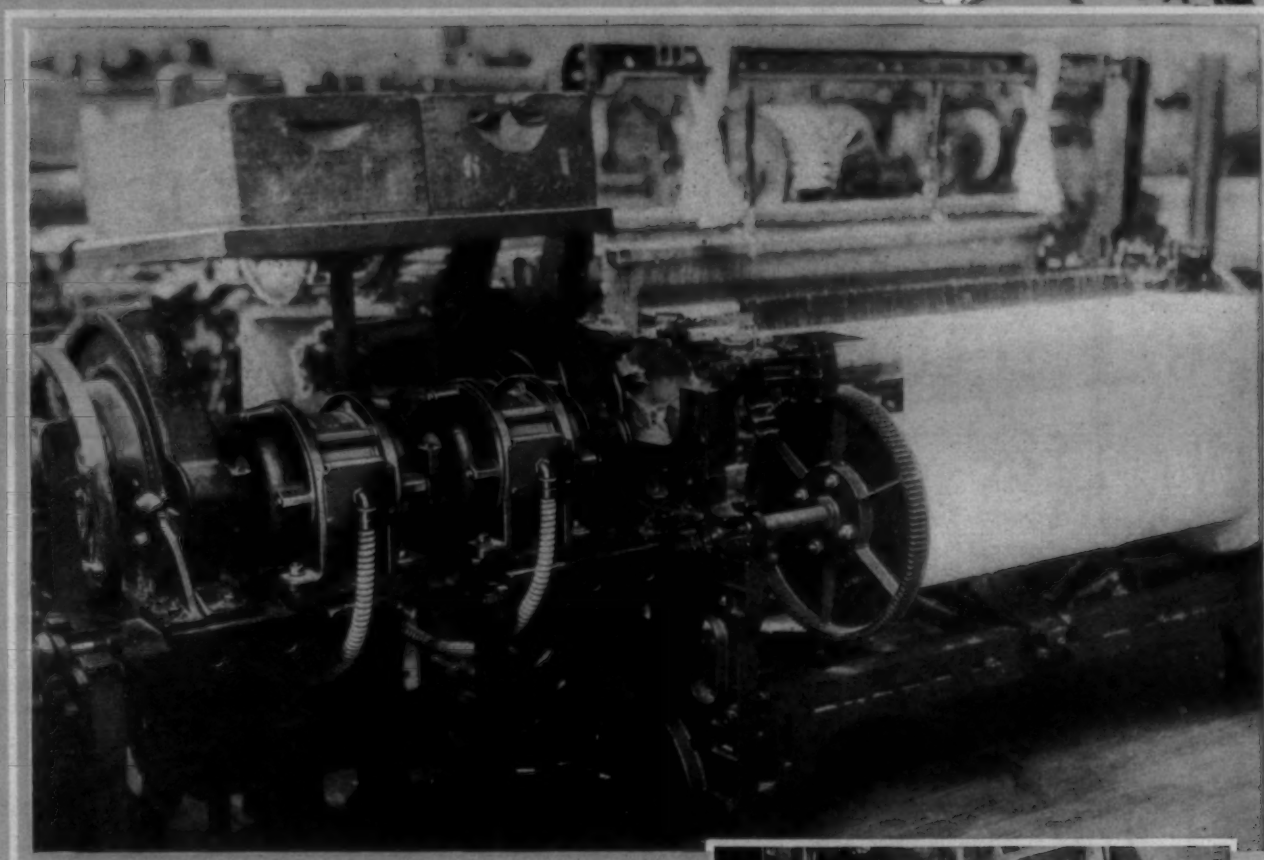
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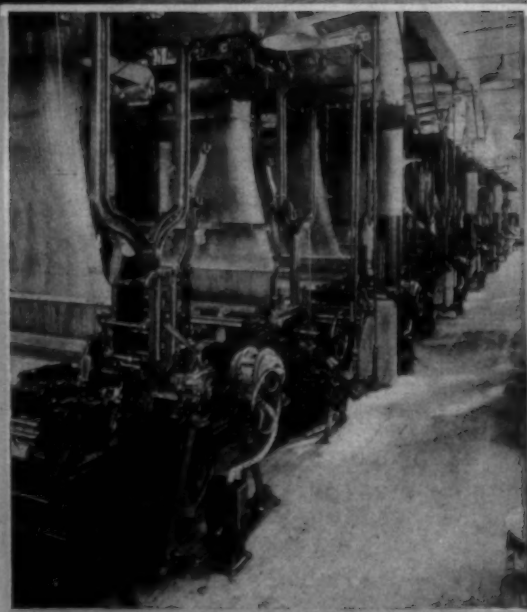


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## Cotton Mill Processes and Calculations

(Continued from Page 14)

pass through reed. Cloth with this appearance is defective, and is called "reedy," and sometimes "two-ey." High whip roll and breast beam tend to remedy this defect.

Other remedies for reediness are slacker warp tension, "sooner" shedding and moving lease rods further back from harness.

262. As shown in Fig. 49 the cloth, after going over and around the breast beam, passes nearly around sand roll, and is wound up, in contact with it, on cut roll. This roll is usually arranged to hold 120 to 150 yards of plain cloth. This length is called a "long cut." When it is removed from the roll and finally put up for sale, it is generally cut into two or three pieces of 60 or 50 yards each. Some looms are so constructed that cut roll will hold only 50 or 60 yards. These pieces are called "short cuts." Sand roll is so called because formerly it was covered with sand paper to make it adhere to the cloth and pull it along.

The sand roll is now usually covered with perforated sheet steel, with edges of perforation burred up on outside to form rough surface.

The sand roll is driven by a train of gears and a ratchet wheel which is moved one tooth at a time by a pawl driven from a cam or eccentric on cam shaft. This is called the "take up motion." One gear in the train is adjustable, to alter speed of sand roll. This speed determines the number of filling threads or "picks" per inch, and hence this change gear is called the "pick gear."

263. The "let off motion" sometimes consists of a brake of some kind on the loom beam to hold the warp tight and let it be unrolled by the pull of take up motion on cloth. A more popular method, however, is partly shown in Fig. 49.

There is a short shaft at back of loom carrying a small pinion which gears under one of the gear heads on yarn beam. This pinion and shaft is turned by a worm gear, which is turned by a ratchet, actuated from the motion of one of the swords which carry the lay. At every stroke of lay, a certain number of teeth in ratchet are moved up, and this gives a small unwinding motion to yarn beam. The amount of this motion may be varied to regulate tension of warp.

264. In weaving ordinary cloth the tension of filling is not usually considered. The turns made by filling in coming through eye of shuttle, together with the natural resistance in unwinding from the bobbin, usually gives enough tension. In some cases, additional tension is made by tacking a small woolen cloth in the shuttle near the eye, so that the filling must drag over it in pulling out. For special purposes, shuttles are made with adjustable tensions. Sometimes the tension in a common shuttle becomes too great on account of the eyes becoming gummed or wearing rough. The remedy is to clean it out or get new eyes or a new shuttle.

### Stop Motion.

265. If filling should break or give out while loom is running, the loom should immediately stop, otherwise there would be a thin streak across the cloth. The filling stop motion, or "filling fork" is designed for this purpose.

### Filling Stop Motion.—Fig. 51.—LETTERING.

- A Loose Pulley.
- B Tight Pulley.
- C Belt Shifter.
- D Guide for Belt Shifter.

(Continued on Page 38)





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# Describes Rayon Characteristics

**M**EMBERS of the Northeastern Section of the American Chemical Society at Boston heard from a leading chemist what practically amounted to admission the rayon industry could not yet state why rayon is rayon.

Dr. Gustavus J. Esselen, Jr., director of research, and vice-president of Skinner, Sherman & Esselen, Inc., chemists and engineers, Boston, stated in a paper read before the society that only recently has even the empirical composition of cellulose, the basis of rayon, become known.

Until this empirical composition,  $C_6H_{10}O_5$ , was discovered, the chemist was checked in his advancement of cellulose products because he could not crystallize cellulose or find its molecular weight. Now, however, the chemist has a picture of the structure of the cellulose molecule, which seems to account for most, if not all, of the facts known about the chemical behavior of cellulose.

Dr. Esselen's talk was illustrated with lantern slides, showing views in a typical American rayon factory, and a small demonstration unit of the spool spinning type actually produced some viscose rayon before the audience. Other exhibits showed fiber in various stages of the viscose process.

Dr. Esselen drew a clear line of distinction between the two methods used in this country for producing the so-called acetate fiber, and indicated clearly why it is that celanese, the product of the American Cellulose & Chemical Manufacturing Co., Ltd., may be cross dyed with the acetate fiber of The Lustron Co.

"For Lustron, the acetate used corresponds fairly closely to the tri-acetate, and the solvent consists largely of one of the higher chlorinated hydrocarbons. The solution, as it leaves the spinnerets is precipitated in a hydrocarbon bath which is miscible with the solvent but is a non-solvent for cellulose acetate. The cellulose acetate used for the production of celanese corresponds more closely to the di-acetate and the solvent in this case is acetone. The resulting solution is forced through spinnerets into a warm atmosphere where the acetone evaporates leaving the cellulose acetate in the form of fine filaments. In either case it is to be noted that the finished fiber is an ester of cellulose and not regenerated cellulose as is the case with the other forms of artificial silk.

Dr. Esselen stated that the best artificial silk, when dry, is about 55 per cent as strong as natural silk of the same size. He said rayon

made on the cupra-ammonium process was subject to the greatest loss of strength when wet; viscose and acetate came next, while acetate suffered the smallest loss.

On the other hand, nitro-cellulose is the strongest when dry, viscose is next, cupra-ammonium next, while acetate is the weakest.

"Accordingly, although nitro-cellulose silk loses 58 per cent of its strength when wet, as against only about 40 per cent loss for acetate, the nitro-cellulose silk is so much stronger than the acetate when dry that both have about the same strength when wet; and both are a little stronger wet than viscose, and very much stronger than cupra-ammonium."

Care has to be exercised in the weaving and knitting. With fibers of nitro-cellulose, viscose and cupra-ammonium, the humidity of the air should not be high, not over 65-70 per cent in any case. On the other hand, acetate silks, probably due to their relative waterproofness, require a higher humidity to keep them from being brittle. For this reason, concerns which have become used to silks of the first group sometimes experience trouble when they try acetate silk, but there is no need for this if the fundamental difference between fibers of the two groups is recognized.

Another thing which should be kept in mind in weaving fabrics containing both cotton and rayon is that these two fibers contract differently in the finishing operations, artificial silk requiring often as much as eight per cent more length than cotton. As little tension as possible should be used and still have the yarn lay flat. With celanese this is particularly important because celanese, alone of the artificial silks, has a certain amount of elasticity and accordingly as little tension as possible should be used to prevent this elasticity coming into play.

The softest and most pliable of the artificial silks is celanese and accordingly it may be woven into very pleasing fabrics particularly for underwear. Its greater heat insulating properties also make it desirable for this purpose and just at the present time the demand for underwear made of this new fabric is greater than the supply. In other types of fabrics, however, where a certain stiffness is required, viscose or nitro-cellulose is superior.

"In finishing celanese, too hot water should not be used or the luster will be affected. A safe limit is 160 degrees F., although the fiber will stand a little higher temperature without injury.

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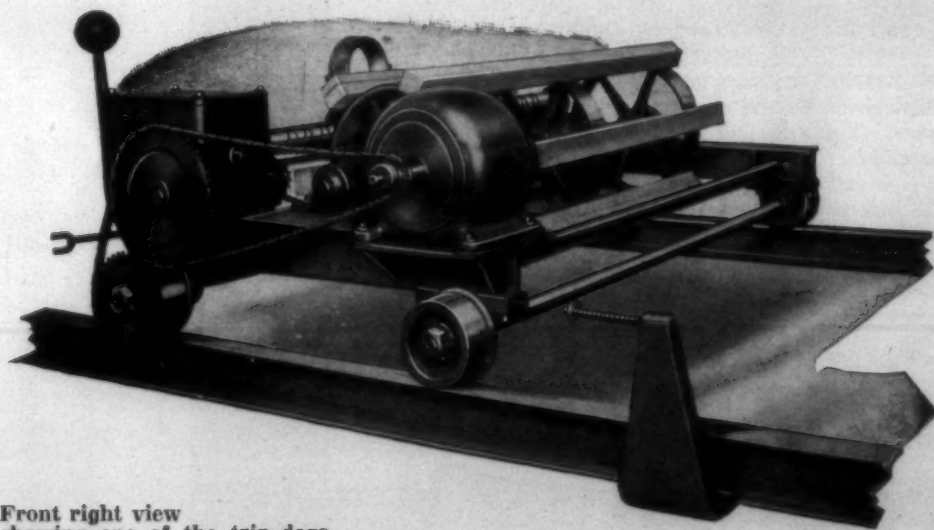


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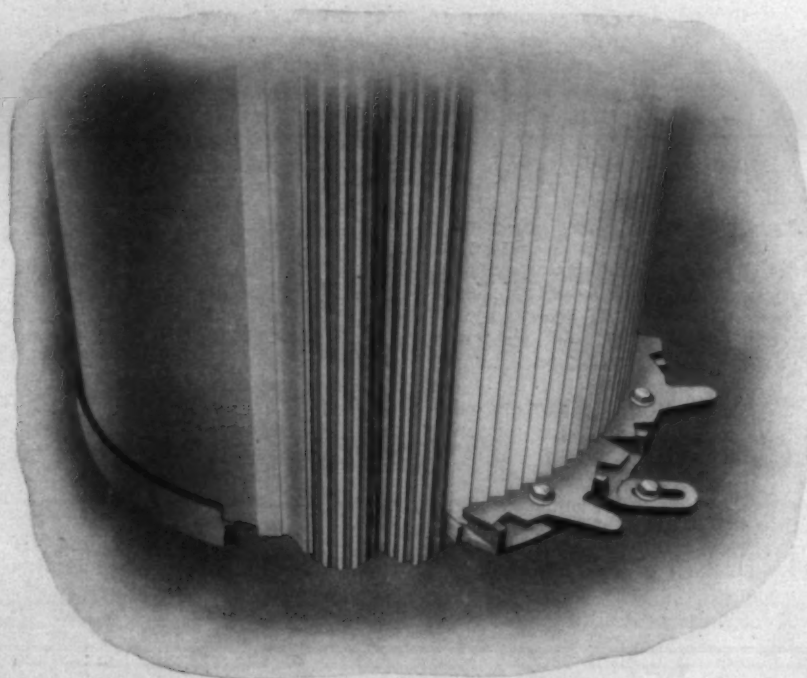
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# Practical Discussions By Practical Men

## Operating With Few Numbers of Yarn and Roving.

Editor:

As I have to make a large number of different yarns, I would surely appreciate it if your advice section would show me a good new system which would simplify the operation of my mill. Supt.

## Yarn Rolls.

Editor:

What can be done to prevent yarn from rolling on a slasher? We are troubled a great deal on account of the ends rolling over one another in front of the slasher on the breast roller. Tex.

## Preventing Thin Places.

Editor:

I am troubled with thin places in my cloth. Can some good weaver advise me what steps to take toward eliminating this trouble? Young Weaver.

## What Puts the Twist Into the Yarn?

Editor:

Some say the spindle puts the twist into the yarn. Others say it is the bobbin and others say it is the traveler. I am rather puzzled on this question, and I reckon others are. There was some argument about this in various textile papers some years ago, but so far as I know, while many spinners had their say about this matter, it was left unsettled. Can somebody now tell us for certain as to what puts the twist in the yarn. Twist.

## Percentage of Cloth Contraction.

Editor:

In figuring the dents per inch in a reed to make a certain construction of cloth, how do we know what contraction to figure? Take a practical example of a piece of goods to be made a warp weave, or a filling weave, as follows: A warp weave is made 128x68, what dent? A filling weave is made 68x128, what dent? I would like an answer to this by a man who has had practical experience on both warp and filling weaves, and can tell me what percentage of contraction to use in each case. Don F. Ano.

## Answer to Up and Down.

Editor:

In answer to Up and Down in regard to what causes ends to break on spinning, I will try to give some causes from my observation. First, slugs, singlings and doublings in roving; second, bad rolls; third, dirty rolls; fourth, dry rolls; fifth, roving traverse not working; sixth,

Do you know how many things will cause ends to break down in spinning? If you think you know them all, you might check up on the lists given in our last two issues in answer to a question asked by an overseer of spinning.

In figuring the dents per inch in a reed to make certain constructions of cloth, how do we know what contraction to figure? A weaver wants to know. Can you tell him?

Another overseer weaving wants to know how to change his cloth weights.

When changing gears on a spinning frame, do you know why the figured draft gear does not always give the yarn number that it figures? How can you prevent thick and thin places in your yarn?

These and other questions, and the answers to some of them are discussed in this department this week. If you can help out any of the men who are asking these questions, write us. Or if you want some information yourself, send in your questions. The Discussion Pages are open to you.—Editor.

weight levers not level; seventh, stirrups not adjusted; eighth, travelers too light or too heavy; ninth, spindles out of set; tenth, guide wires out of set; eleventh, rings worn; twelfth, frame out of level; thirteenth, lifting rod bushing and rods worn; fourteenth, humidity not right; fifteenth, high speed; sixteenth, bad cotton; seventeenth, rings too large for size of bobbin; eighteenth, traverse stroke too short for size of bobbin; eighteenth, traverse stroke too short or too long; nineteenth, traverse too fast or too slow; twentieth, high end piecing.

There are various other causes too numerous to mention, but these are the most common causes I have found in my fifteen years' experience between the spinning frames. Experienced.

## Answer to Shuttle.

Editor:

Shuttle has made a very common error regarding cloth weights. If your cloth is 4 per cent too heavy and there is about as much warp in your cloth as filling, you must change your filling 8 per cent lighter to make your cloth 4 per cent lighter. If the filling is only one-third of your cloth you will have to make your filling 12 per cent lighter and vice versa.

Pointer.

## Answer to S. C.

Editor:

In regard to the height of thread boards, a question which S. C. has brought up for discussion, I will say this is a very important matter for the spinner to know. The writer has experimented a great deal with different settings and realizes from practical experience that the setting of thread boards makes a big difference in the operation of a good running spinning.

Of course, the proper height of the thread boards depends upon several different things, as follows: The speed of the spindles, the

size of the rings, the size of the yarn, the kind of cotton used, the size of the traveler used, setting of the spindles, setting of the thread guides, angle of the steel rolls, the length of the traverse, the diameter of the bobbins, the condition of the bobbins, the twist in the yarn, shaky or loose thread boards.

All of the above things directly affect the height at which the thread boards may be set above the spindles or rather the bobbins. If all of the things mentioned in this list are properly adjusted and scientifically proportioned, the thread boards may be set much closer to the top of the spindle than when one or more of these things are not set right, or are out of proportion. And, owing to the fact that these various things vary so much, it is not possible to advise nor compile a table of correct settings for all mills. The conditions vary too much. That is why the machine builders advise no standard. And that is also why the spinning frames are sent from the shops with adjustable thread board brackets. This enables the overseer of spinning to set his thread boards at the height which, in his own good judgment born of long experience, tells him is right. Therefore, this is wholly a matter of trained service. Where, in one case, the adjustments and proportions are so nicely balanced and correctly set, the thread boards can be operated successfully at a height of, say, 1½ inches above the bobbin tips, in another case, where conditions are different for making the same yarns, the operations would not be successful unless the thread boards were set at the least 2¼ inches above the bobbin tips and maybe 2½ inches high.

Just the simple matter of having old bobbins in the service and that are more or less slivered at the top, if the thread boards were set at a distance of 1½ inches, the ends would catch in these rough bobbin tips and be broken.

Where it is necessary to run heavy travelers, the thread boards cannot be set too near the top of the bobbins. Each spinner must

learn for himself the best position for his thread boards. Experience has taught successful spinners that it is not practicable to set the thread boards much closer than 1½ inches nor farther away than 2½ inches above the bobbin tips. Where the thread boards are set closer or farther away the conditions are exceptionally different. Somewhere between 1½ to 2½ inches is the right height.

Hoping this answers and will set the boll a-rolling, will sign myself Tip Top.

## Answer to Up and Down.

Editor:

In answer to Up and Down as to what causes ends to break down in spinning, I will give a few causes. They are dirty rolls, clear waste coming through, hard ends made in roving, too much twist in roving, speeder and jack frame tenders failing to clean top clearers properly, as just a little waste from a top clearer will break ends down. Dry rolls on spinning will cause spinning to run badly. Not having the proper traveler will break ends. If travelers are too light or too heavy, ends will break.

A good cleaning system in spinning will make the work run better. I believe that if Up and Down will watch his cleaning and keep top clearers perfectly clean and be sure to oil the rolls at least twice a week with non-fluid oil, it will keep the ends up. Sometimes the sweeper will bring down more ends than anything else. Fans and flaps, as we call them, should never be used in spinning room. Did you ever notice what happens when a sweeper gets his flap and starts to sweep out? Just watch him sometimes and see how many ends come down while he is fanning the cotton half way across the room. At the same time, all kinds of dirty cotton will fly in the ends and break them down. If this fly happens to get through the traveler, it will show up in the cloth. I hope this will help Up and Down. Of course, I have given only a few of the things that make broken ends.

Sweeper.

## Answer to Napper.

Editor:

In reply to the question by Napper, I will say that the napping of cottonades is a problem in itself. There are two kinds of cottonades—those which have to be napped on the filling side and those which must be napped on the warp side.

Boss napper did not state what kind he is napping. But I will say that to retain strength when cottonades have to be napped on the warp side, the warp yarn should be spun as soft as the yarn will be woven well. But the filling should be twisted hard like the warp yarn



would be so as to give the yarn left in the cloth strength. Napping is a work of destruction anyway, and napped goods cannot be expected to have much strength left. However, it is not reasonable to expect cottonades to be strong after napping if the warp side is whipped out into plush and fuzz and leave only the soft filling into it. Therefore, when napping the warp side, put less twist in the warp and more twist in the filling.

Secondly, in order to nap cottonades in good shape and rapidly, it is a good thing to calendar the goods first, and the warp side of the cloth should be face run down against the steel roll of the calendar. This process will perform two services. First, it will break up the size left in the cloth after weaving. Second, it will level the face of the cloth so that the napper wire will hit on all points. Every point becomes a cutting edge and as the face of the cloth will be level, the nap will be long, even, and velour yor plush-like.

Washing these goods in softened water will also add much to the ease and rapidity of napping. This should be done before the goods are calendered.

Another valuable help to napping is to raise the side to be napped as much at the loom as is possible. This is called facing the cloth. This is done by the proper setting of the harnesses of the loom, shedding mechanism and the beating up process.

Your napper wire must be kept sharp and properly set. Coarser

wire is also better for napping cottonades than fine wire. The cloth should not be broken or napped too hard to start. That is, the cloth must not be harshly treated. Good napping cannot be secured by tearing and ripping the way through the cloth. The best napping is built on a little at a time. It is better to give these goods thirty runs than to tear the yarn or face of the cloth all to rags in a dozen runs. Also, there must be more ends per inch on the warp side than picks of filling if the warp side is to be napped.

Fluffer.

#### Answer to Spindle.

Editor:

Spindle has surely run up against a very common error in changing yarn numbers, but also a very complex problem. It is all right to figure out the draft gears required, but good judgment and common sense must also be coupled with the computation. I will explain that there are many other points to take into consideration on this problem, as follows.

1. There is no such a thing as changing a fraction of a tooth. For example, your present yarn may require a  $40\frac{1}{4}$  tooth draft gear but, of course, you will put on a 40-tooth gear. Your new yarn wanted may call for a  $36\frac{1}{4}$  tooth gear and you have to put on a 37-tooth gear. Here you have lost one tooth of draft gear in actual practice.

2. The relationship of your new yarn to the traveler may be of a

different tension proportion. Your present yarn calls for a traveler number  $4\frac{1}{4}$  and your new yarn may call for traveler number  $2\frac{1}{4}$ . In the first case you used a No. 4 while in the second case you had to use a No. 3. Your old yarn operated  $\frac{1}{4}$  of traveler too light, while your new yarn operated with a traveler  $\frac{1}{4}$  of a number too heavy. This may make a slight difference in your yarn number.

3. Again, your old yarn calls for a 30% twist gear and you have to use a 31. Your new yarn calls for a  $26\frac{1}{4}$  and you are obliged to run with a 26-tooth twist gear. See what this will do for you. Your old yarn runs with  $\frac{1}{4}$  of a tooth more twist, and  $\frac{1}{4}$  of a traveler number on the easy side of the tension while your new yarn has to operate with  $\frac{1}{4}$  of a traveler number on the hard side of the tension and  $\frac{1}{4}$  of a tooth less twist. This will stretch your yarn more.

4. Your old yarn may run out with the roving on the heavy side and your new yarn run with the roving on the light side.

5. And how about wet or dry weather? So you see the endless reasons almost as to why you can't figure your new draft gear and get your new yarn number on the dot at one crack. Be sure to cut out this answer to your question and paste it in your hat, as this is very valuable information which has never been previously published. There is still another reason.

6. When you increase the draft, you spread your sliver out thinner

between the rolls. When you decrease the draft you increase the sliver ribbon between the rolls and narrow it more.

Now here is a very nice fine point in cotton manufacturing. A thicker sliver will deliver faster over the steel roll than a thinner one. In other words, coarser yarns increase the diameter of the steel roll, while finer yarns decrease the size of the steel roll, as it were. Still another way of making this point clearer. It is farther away from the centre of the steel roll to the middle of a thicker sliver than it is to the centre of a thinner one, and your draft constant is slightly changed over night! What are you going to do about it? H. D. Martin.

#### Answer to Up and Down.

Editor:

Up and Down has certainly started something, and if he ever gets all the causes of ends coming down on a spinning frame he will be going some. However, I will try to give him some of the things that will cause ends to come down. First of all, he may start in his picker room and go all the way through this process and cut out all thick and thin places in his laps. Then to the cards and see that the card hands when laying laps do not overlap the new laps and the ends that are going through the feed rolls any more than just scarcely enough to start the new lap, through the feed rolls, as every inch you lap on the

(Continued on Page 34)

# RAYON REEDS

On account of the ever-increasing use of Rayon (artificial silk) by Southern cotton mills, we are making a reed particularly adapted to the Rayon yarns.

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## Sees Good Year for Cotton Mills

Greenville, S. C.—A good year for the cotton mills of the South is predicted by J. D. Woodside, vice-president and treasurer of the Woodside and Easley group of cotton mills.

Mr. Woodside said that stocks of goods over the country were not large and that there should be a steady demand for the products of Southern mills during the present year. Many of the more influential business men of the nation have their eyes on the South and the progress being made in this section, he said.

Mr. Woodside is a native of Greenville, but has made his home in New York for some time, having charge of the New York office of the Woodside interests. The mills of which he is vice-president and treasurer are the Woodside plant in this city; the mills at Fountain Inn and Simpsonville and the three mills of the Easley group, two of which are located at Liberty and the third at Easley.

## Massachusetts Cotton Mills

Boston.—The Massachusetts Cotton Mills 1925 report is of more than passing interest because of the company's prominence in the textile industry and because it was one of the many 1925 dividend casualties. The figures now show that passing

of the dividend in October was the result of cumulative adverse conditions rather than a sudden turn for the worse in the company's affairs.

Massachusetts Cotton Mills last year made a very substantial improvement over 1924, operating loss amounting to the comparatively small sum of \$27,590 against \$421,000 in the previous year. The red ink figures can be attributed to the falling cotton and goods market and inability to run the northern plant near capacity. As a matter of fact the loss was more apparent than real, as some of the goods valued at market prices at the end of the year have since been sold at prices entailing no actual loss.

The results furnish an interesting commentary on textile conditions North and South. Massachusetts Cotton Mills has 277,248 spindles and 8,244 looms, with about 60 per cent of the machinery at Lowell, Mass., and 40 per cent at the Lindale, Ga., plant. Last year an operating loss of \$474,038 was incurred at the Lowell plant while the Georgia plant showed a profit of \$446,448. A year previous the loss in the North was about \$600,000 and the gain in the South about \$200,000. The Southern plant would thus seem to be a bright spot in the Massachusetts Cotton Mills situation, holding splendid possibilities for the time when textile conditions are such that the Lowell plant can at least break even.

The company's latest balance sheet showed the customary treas-

ury strength. Net quick assets were \$4,125,251, or \$82 a share. The 50,000 shares of stock outstanding constitute the sole capital liability. At current quotations around 71 for the stock the entire property is selling in the market for \$3,550,000 against a conservative book value of \$9,915,375.

Last year the Northern mill was run at only about 40 per cent of capacity, which of course did not conduce to economical operation. The company did not make up more goods than it could sell; more goods were sold than were manufactured. Inventory now stands at \$4,341,271 against \$4,988,464 a year ago. Business is now healthy except for volume and unless a falling cotton and goods market again develops the figures a year hence should be in black ink.—Boston News Bureau.

## Low Grade Cotton Affecting Cloths

The surplus of low grade and dark cotton in the present crop has begun to affect cloth markets perceptibly, as many men anticipated it might, when products from the new yield began to appear in the markets. The use of dark cotton in many fabrics does not injure their quality as they are either bleached or dyed after the cotton has been properly carded and spun. Often times the strength of the staple is of little consequence as the finished fabrics are placed under no great strain.

But in many instances where the low grade cotton is used the products may be sold profitably much lower than similarly constructed fabrics made from good white cotton of exceptional staple. This year there have been many cloths sold in the markets from  $\frac{1}{8}$  cents to  $\frac{3}{8}$  cents a yard under other cloths of similar construction and weight and the reason has been that the cotton has cost the manufacturer from 5 cents to 7 cents less than good white selected grades. It has paid these manufacturers to take an added amount of waste out of the low grade cotton, as they still had a profit in it compared with high grade.

In a number of grey cloths, sheetings and print cloths these varying quotations led to the practice of misquoting sales by giving the low price as the true market price of some staple constructions. Some manufacturers put a stop to this practice by warning brokers and others, but this has not prevented buyers of cloths from giving out misleading prices, with the claim that the low figures represent the true market.

The use of waste cotton, or low grade cotton, is an old story in osnaburgs and other goods that serve their full purpose without being made of selected cotton. But care is taken in giving out prices to indicate that the quotations are for goods of part waste or low grade staples.—Journal of Commerce.



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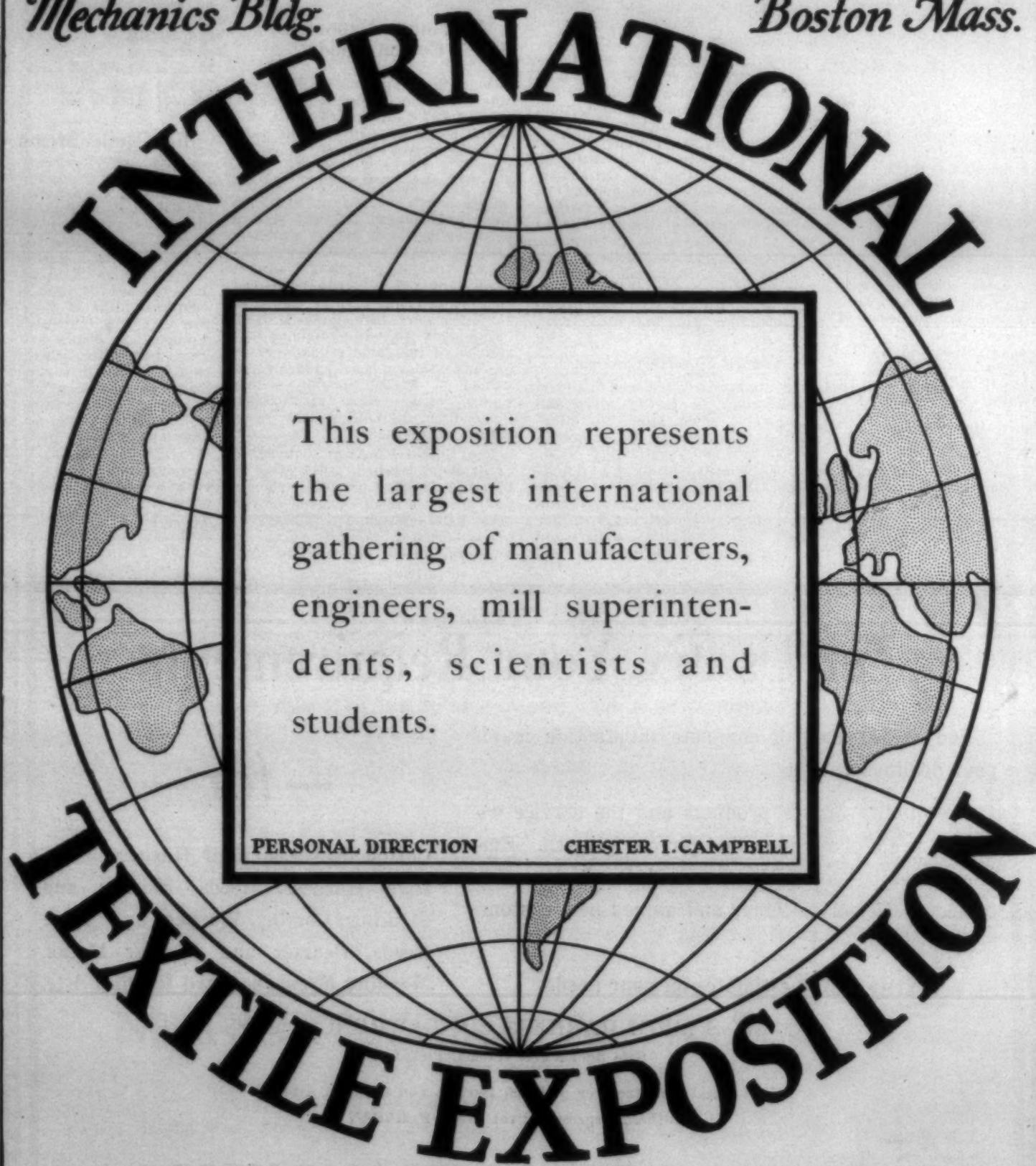
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### C. R. Makepeace Dead

Charles R. Makepeace, one of the best-known designing and consulting industrial architects and mechanical engineers in this country, former member of the Providence Common Council and a \$1 service man during the World War, died at his home in Providence, R. I. He was struck by an automobile early in November, but had apparently recovered from the effects of the shock.

Mr. Makepeace's firm was one of the oldest in the Butler Exchange, having occupied offices on the fourth floor for nearly half a century. It was established by the late D. M. Thompson, with whom Mr. Makepeace became associated upon his coming to Providence in 1885. A few years later Mr. Makepeace succeeded to the business and had since conducted it under the name of C. R. Makepeace & Co. The firm made a specialty of textile mill architecture and engineering, and designed and equipped all types of textile plants, including cotton and woolen mills, bleacheries and dye works, as well as incidental buildings, such as power and water plants.

#### Designed Many Mills.

In addition to mills located in Rhode Island, the firm has designed and equipped plants in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Virginia, North and South Carolina, Georgia,

Alabama, Mississippi, Louisiana, Ohio, Oklahoma, Indiana, Illinois, Kentucky, Texas, Arkansas, California, Canada, Mexico, South America and Australia. In all something more than 250 are to the credit of the concern.

Included in the list of important and prominent Southern mill projects, which were designed, improved or equipped in whole or part, were the following:

Proximity Manufacturing Company, at Greensboro, N. C.; Eno Cotton Mills at Hillsboro, N. C.; Clifton Manufacturing Company at Clifton, S. C.; Louisville Cotton Mills at Louisville, Ky.; Lynchburg Cotton Mills, at Lynchburg, Va.; California Cotton Mills at Oakland, Cal.; Piedmont Manufacturing Company at Piedmont, S. C.; Muscogee Manufacturing Company at Columbus, Ga.; Alden Knitting Mills at Meriden, Miss.; Alden Knitting Mills at New Orleans, La.; Montgomery Cotton Mills at Montgomery, Ala.; Galveston Cotton Mills at Galveston, Tex.; Tulsa Cotton Mills at Tulsa, Okla., and others.

#### Started in North Carolina.

Mr. Makepeace received his first introduction to textile mills and equipment, when after his interrupted college course he entered a cotton mill at Fayetteville, N. C., had been operated by his grandfather, George H. Makepeace. There he received the thorough training in these essential particulars that later made him a recognized expert and authority in mill architecture and

engineering. He was familiar with practically all of the large mill properties throughout the country, especially in New England, and was frequently called upon to design and supervise, as well as in consultation regarding changes, additions and improvements in arrangements and equipment of many of them.

### December Exports of Cotton Goods

Domestic exports of cotton cloths, other than duck, during December totalled 45,796,464 square yards valued at \$6,726,162, figures made public by the Department of Commerce show.

Of the total exports 11,896,552 square yards valued at \$1,419,709 were unbleached, 7,744,053 square yards valued at \$1,089,192 bleached, 8,861,749 square yards valued at \$1,118,328 printed, 9,125,427 square yards valued at \$1,723,644 piece dyed and 8,168,683 square yards valued at \$1,375,289 were yarn or stock dyed.

Shipments to non-contiguous territories of the same goods were as follows: Alaska, 11,546 square yards valued at \$2,659; Hawaii, 600,631 square yards valued at \$109,463; Porto Rico, 3,464,073 square yards valued at \$691,138.

The United Kingdom took 30,566 yards of unbleached, 23,547 yards of bleached, 11,906 of printed goods and 9,914 of piece dyed. Canada on the other hand consumed 1,289,409 yards of unbleached, 675,267 yards of bleached, 437,321 yards of printed,

672,509 yards of piece dyed, and 105,289 yards of stock dyed. After Canada the largest consumer is Colombia with 1,209,009 yards of unbleached, 404,929 yards of bleached, 1,374,824 yards of printed, and 972,562 yards of piece dyed.

British Indian used 332,504 yards of unbleached, 9,913 yards of bleached, 31,119 yards of printed, and 96,559 yards of piece dyed. The Philippine Islands used 706,054 yards of unbleached, 2,854,607 yards of bleached, 1,885,158 yards of printed, 978,932 yards of piece dyed, and 617,961 yards of stock dyed.

### Mills Build Steam Plants

Greenville, S. C.—Cotton mills of this section are taking precautions against another drouth such as this district experienced in 1925, and which extended into the early part of 1926, causing a shortage of power and forcing mills to remain idle a large part of the time.

Several mills of this section are now enlarging their steam plants or building new plants outright, it was learned from the office of J. E. Sirrine & Co., mill engineers. Steam plants now being enlarged, or to be rebuilt in the near future, are those of the Belton Mills, at Belton; the Chiquola Mills, at Honea Path and the Balfour Mills, at Balfour, near Hendersonville, N. C. The last named is a new job, there having been no steam plant at the Balfour Mills. The plant at the Belton and Honea Path are being considerably enlarged.

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# SOUTHERN TEXTILE BULLETIN

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JUNIUS M. SMITH	Business Manager

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Address all communications and make all drafts, checks and money orders payable to Clark Publishing Company, Charlotte, N. C.

## Directories Came Fast

THE fact that the Southern Textile Bulletin is read by the cotton mill men of the South was fully demonstrated by the response that came to our request for certain missing copies of Clark's Directory of Southern Textile Mills.

Our issue of last week was hardly in the mails before Directories began to come in and in two days a veritable flood of them began to arrive.

A prominent mill man said last year that he subscribed for a large number of journals and magazines but that the only editorial page he read was that of the Southern Textile Bulletin, and there must be many other editorial readers, for the notice about the missing directories appeared on our editorial page.

We agreed to pay \$10 for the first copy of our January 1, 1912, issue, and that was sent in by G. B. Hamby, Abbeville, S. C.

The first copies of the other missing issues were received from the following, and each of them received a check for \$5.00:

Aug. 1, 1912—Z. N. Epps, Haw River, N. C.

Aug. 1, 1913—C. P. Trippe, Cordova, N. C.

Jan. 1, 1914—Geo. Tyser, Belmont, N. C.

July 1, 1914—J. B. Meacham, Charlotte, N. C.

Jan. 1, 1915—J. B. Horton, Rock Hill, S. C.; Harry B. Iler, Greenville, S. C., and D. T. Golightly, Easley, S. C.

July 1, 1915—R. T. Le Grande, Shelby, N. C.

Jan. 1, 1916—John Quick, Rock Hill, S. C.

July 1, 1916—S. L. McClure, Jamestown, N. C.

Jan. 1, 1917—M. E. Lake, Charlotte, N. C.

Jan. 1, 1919—Geo. W. Ray, Brookford, N. C., and A. F. Hedgepath, Liberty, S. C.

Jan. 1, 1922—G. O. Starr, Charlotte, N. C.

It will be noted that in one case three and in another two of the issue desired were received in the same mail and in those cases the reward was divided.

We only needed one copy of each issue and therefore returned all of those received after the first copy reached us.

Thanks to the prompt response, we now have a complete file of Clark's Directory of Southern Textile Mills.

## Cussed in Dakota

A LADY from South Dakota, on a visit to her uncle in Charlotte, came to our office this week and said that she had heard so much about David Clark that she wanted to meet him.

She stated that during the consideration of the Federal Child Labor Amendment by the South Dakota Legislature, more time was devoted to "cussing" David Clark than to any discussion of the merits of the proposed amendment.

She said that Miss Kyle, a member of the Legislature, had been in Washington lobbying for the passage of the amendment by Congress while Mr. Clark was opposing same and spoke with much heat about the many delays that his tactics had caused in its passage.

The lady that visited us had fought very hard against the ratification of the amendment by South Dakota and expressed her appreciation of the assistance that we gave her group during the campaign.

Although she had opposed the amendment, she was absolutely astonished when we told her that under the present State laws no child under 14 years of age could be legally employed in any Southern cotton mill and she was delighted that she could go back to South Dakota and make that statement.

The years of falsehoods and misrepresentations seems to have made it very hard for people in other sections to realize that the Southern States now have adequate laws.

## Miss Abbott Again

IN "Popular Magazine" we note the following:

Child labor in the United States is increasing, according to reports received by the government's children's bureau. In January, 1920, there were a million children between the ages of ten and sixteen employed. Reports received recently from twenty out of thirty-one cities showed increases over the 1920 figures. Five of these cities reported one hundred per cent increases. Miss Grace Abbott, chief of the bureau, says that the best remedy for this unfortunate condition is the passing of an amendment to the Constitution giving Congress the power to regulate labor.

Miss Grace Abbott, chief of the Children's Bureau of the United States Department of Labor was greatly disappointed when the Federal Child Labor Amendment was defeated, because she anticipated that her department would have control of the expenditure of more than one million dollars a year which would mean a larger salary and more patronage for her.

State laws are being steadily advanced and child labor is decreasing, but Miss Abbott and her associates make "studies" and juggle the figures to create the impression of increased child labor.

The people of this country have, however, learned that all of her reports are unreliable and they no longer have much effect.

## Kentucky Rejects

THERE were a few Legislatures that did not meet last year, and it is with great pleasure that we have read the following:

Frankfort, Ky., Feb. 1.—The Kentucky senate today rejected, without a dissenting vote, the proposed child labor amendment to the United States constitution. The house is expected to take action on the proposed amendment this week.

When we dared to take the Federal Child Labor Laws to the United States Supreme Court, where they were declared unconstitutional, we were overwhelmed with abuse, and when we later dared oppose the ratification of the amendment, we were declared to be almost beyond the pale.

The Kentucky Senate, a State that was originally considered to be certain to ratify, rejects the amendment without a single dissenting vote, and we are moved to observe that ideas have changed.

The Kentucky Senate now unanimously approves the position that we took when it was extremely unpopular and we wonder how the

statements of some of our former critics would appear if published now.

Virginia and Mississippi Legislatures meet this year and Alabama and Maryland meet in 1927. All will reject the amendment by practically unanimous votes.

The proposed Federal Child Labor Amendment is as dead as the proverbial door nail and with its demise has gone the hopes of those who had many other centralization plans.

Child labor will disappear as it should, but it will be by the act of the States instead of under the pressure of an old maids' bureau in Washington.

## Imitation Liquor

LESS than 2 per cent of the liquor captured by Federal prohibition forces is the genuine, unadulterated products, as advertised on the label, according to a survey just completed by General L. C. Andrews, head of prohibition enforcement in the United States.

Information obtained by the authorities discloses that the bootleggers have acquired a facility for imitating every brand of once popular domestic liquor and the well-known foreign varieties—not only in taste, but in "complexion," size and shapes of bottles and in label.

According to the statement of General Andrews, no class of people were ever guilty of any such frauds as are now being perpetrated by the bootleggers.

## Fifteenth Anniversary Number

THE Fifteenth Anniversary Number of the Southern Textile Bulletin, to be issued on March 4, and which will be combined with our usual Annual Review Number, will present the most detailed statistics of Southern textile growth that have ever been compiled. In addition to our regular spindle increase list and similar compilations, this number will give a detailed record of Southern mill expansion during the past fifteen years.

The Anniversary Number will be devoted primarily to a review of Southern textile development during the fifteen-year period, 1911-1926. The growth of the industry during that period will be traced by figures showing in detail the increase in spindles, looms and knitting machines by individual mills since 1911. The trend toward textile diversification in the South will also be shown, with a list illustrating the gain in bleaching, dyeing and finishing plants.

The information referred to above, together with many other features in our Anniversary Number, will not only be of great current interest, but also extremely valuable for reference purposes.

The South's textile industry has undergone a wonderful development during the past fifteen years and a detailed chronicle of this development will be a distinct contribution to textile history.



## Personal News

J. W. Hale has resigned as superintendent of the Calhoun (Ga.) Yarn Mills.

W. S. Morgan has resigned as overseer of carding at night at the Cleghorn Mills, Rutherfordton, N. C.

J. H. Seeman has been promoted to overseer carding at the Cleghorn Mills, Rutherfordton, N. C.

J. C. Worley has been promoted to overseer spinning at the Dover Mill, Shelby, N. C.

Gus Taunt has resigned as night overseer of weaving at the Eureka Cotton Mills, Chester, S. C.

J. A. Hinson has resigned as night overseer of spinning at the Eureka Mills, Chester, S. C.

W. J. Grant is now overseer of weaving at the Henrietta Mills, Caroleen, N. C.

L. G. Harden has been promoted to overseer carding at the Dover Mills, Shelby, N. C.

C. L. Kilby is now superintendent of the Catawba Cotton Mills, Newton, N. C.

E. H. Crowe has been promoted to overseer spinning at the Catawba Cotton Mills, Newton, N. C.

R. H. Rowe has resigned as night superintendent of the High Shoals plant of the Manville-Jenckes Company, High Shoals, N. C.

D. Pressley has resigned as overseer of carding at the Catawba Spinning Company, Mount Holly, N. C.

J. B. Meacham, manager of the Atherton Mills and the Robinson Spinning Company, Charlotte, has also been appointed manager of the Insulating Yarn Company, of Charlotte.

E. G. Melver, manager of the Erwin Cotton Mills No. 2 and No. 5, at Erwin, N. C., recently underwent an operation at Boston, Mass., and has not yet recovered sufficiently to return to his work.

J. L. Rhinehardt has resigned as overseer of carding and spinning at the Dover Mills, Shelby, N. C., to become overseer spinning and spooling at the Cliffside Mills, Cliffside, N. C.

L. C. Langston has not resigned as superintendent of the Hickory Spinning Company, Hickory, N. C., as recently stated through error. This correction is made in justice to Mr. Langston, who is running the mill in an entirely satisfactory manner.

R. W. Arrington, superintendent of the Union Bleachery, Greenville, S. C., recently sailed for Europe to study dyeing, bleaching and finishing methods in England, France and Germany. He will be abroad for a month or more.

L. D. Pitts has been elected president of the Industrial Cotton Mills, Rock Hill, S. C. He has been treasurer of the company for some years.

Alex Long has retired as president of the Industrial Cotton Mills, Rock Hill, S. C., in order to devote all his time to the management of the Aragon-Baldwin group of mills, of which he is president.

T. C. Gore has resigned as overseer carding at the Atlantic Cotton Mills, Macon, Ga., to become overseer carding at the Adams Duck Mills, of the same place.

L. P. Hollis, superintendent of the Parker district schools, Greenville, S. C., has been re-elected president of the Southern Textile Athletic Association.

George H. Anderson, manager of the Apalache plant of the Victor-Monaghan Company, at Greer, S. C., has returned from a business trip to Philadelphia.

W. E. McAbee, formerly overseer of cloth room at the American Spinning Company, Greenville, but more recently of the Gluck Mills, Anderson, S. C., is now overseer of the cloth room at the Henrietta Mills, Henrietta, N. C.

M. D. Haney, who recently resigned as superintendent of the Stonecutter Mills, Spindale, N. C., has accepted a position in the production department of the Industrial Rayon Company. He is at present studying rayon manufacture at the Cleveland plant.

### Banquet at Trion.

The annual overseers' banquet at the Trion Company, Trion, Ga., was held recently in the Trion Y. M. C. A. After an excellent dinner, short talks were made by several of the overseers, second hands and officials of the company. The talks by the overseers dealt with the accomplishment of their respective departments during the past year and an outline of what they expect to accomplish during the coming year.

### New Yarn Agency.

W. George Thomas and H. T. Cosby, of Charlotte, have formed a new yarn selling agency to be known as Cosby & Thomas, with offices in the Johnston Building, Charlotte, and a branch in the James Building, Chattanooga.

Mr. Thomas was employed by the Johnston Mills, Charlotte, in their New York offices for a number of years and was later vice-president of Paige-Schoolfield & Co., coming to Charlotte for that company. For a little over a year he has been in business for himself in Charlotte.

Mr. Cosby has for a number of years represented the Gastonia Cotton Yarn Company and the Carolina Cotton Yarn Corporation in the South.

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A DISTINCTIVELY SULPHONATED C. P. CASTOR OIL  
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The following vital reasons tell you why AMALIE SULPHO TEXTOL OIL will fit in *profitably* with your dyehouse requirements—

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Being *acid proof* and *lime proof*, it resists *extremely hard water*, acids (also inorganic) and high temperature dye liquors. It will not separate out of solution and form *insoluble scums* in the dye kettle.

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*Manufacturing Chemists to the  
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**L. SONNEBORN SONS, INC., NEW YORK, N. Y.**



# MILL NEWS ITEMS OF INTEREST

**Sargent, Ga.**—It is understood that the addition to the Arnall Mills will contain 15,000 spindles.

**Denison, Tex.**—The Denison Cotton Mills have increased capital stock from \$350,000 to \$700,000.

**Nashville, Tenn.**—The Nashville Hosiery Company, 64 North Third street, has been incorporated by J. S. Allen and associates.

**Lexington, N. C.**—The Wabena Mills have let contract to J. W. Tussey for an addition to its plant and will install 2,000 additional spindles.

**Andalusia, Ala.**—It is understood that the Andalusia Manufacturing Company has let contract for the erection of a mill building, three stories and basement, 50x125 feet. The company was organized some time ago, as previously noted.

**Columbus, Ga.**—The Muscogee Manufacturing Company has let contract for its mill addition to Baton-Cook Company, West Point, Ga., at a cost of about \$500,000. The building will be five stories, 193x113 feet, with an ell 47x108 feet, one story. First floor will be of reinforced concrete and four upper stories of standard brick construction. C. R. Makepeace & Co., of Providence, are the engineers.

**Central Falls, N. C.**—W. S. Trickett, manager of the Pennsylvania Textile Mills branch factory, states that a one-story brick addition will be constructed at the plant at a cost of about \$50,000, giving about 4,500 square feet additional, and allowing output of the plant to be increased about 30 per cent. Twelve houses for operatives recently have been constructed at the mill, one of a chain operated by the Pennsylvania Textile Mills.

**Red Springs, N. C.**—The sale of the Red Springs Cotton Mills to R. W. Townsend, H. Grantham, W. E. Garrett, W. J. Johnson, W. J. Council, A. T. McCallum and J. A. Singleton for \$150,000 has been confirmed by the United States District Court, the directors have been notified. The mill recently went into the hands of a receiver and when sold only one bid was made, H. Grantham bidding for himself and the other six men, all of whom were directors of the mill. The property is estimated to be worth at least \$500,000. The mill has been running continuously and it will continue, according to the new owners, who have announced that a meeting will soon be held to perfect an organization.

The new company has been incorporated as the Dora Cotton Mill, with an authorized capital stock of \$600,000 by the above named purchasers. Officers and directors will be elected within a few days.

**Newton, N. C.**—The Warlick Manufacturing Company, Newton, N. C., have purchased Universal winding machines for winding rayon.

**Galveston, Tex.**—The Galvez Mills have let contract to J. W. Zempter & Co., 2204 B street, for the construction of their mill building. Chas. T. Main, Boston, is the engineer.

**Charlotte, N. C.**—It is understood that the Acme Rayon Company, of Cleveland, Ohio, will erect a rayon manufacturing plant in the South. The company, which has been in business since 1923, is increasing its capital stock to \$1,530,000.

**Icard, N. C.**—It is reported that the Icard Cordage Company has purchased a carding and roving equipment and will erect a yarn mill with which to manufacture yarn for their braiders. They will not install spinning frames but will make coarse yarn on roving frames.

**Roseboro, N. C.**—The Roseboro Cotton Mills, which were recently incorporated here, as noted, will erect a yarn mill of 5,000 spindles. The mill building will be 100x280 feet, brick and steel construction, to cost \$30,000. Machinery will be electrically driven. Troy I. Herring is president, G. A. Otter, secretary, and A. I. McDonald, superintendent.

**Lillington, N. C.**—F. H. Chamberlain, of Lincolnton, representing owners of a cotton mill near Baltimore, Md., has been here to confer with local business men relative to moving the plant to this place. Details of the plan include the taking of \$30,000 in stock by Mr. Chamberlain's interest and the building of the mill and tenant houses by local interests. The matter will be handled by a committee composed of Mayor Thompson, H. T. Spears and J. R. Baggett.

**Greenville, S. C.**—The contract for the installation of the heating equipment, fire protection and humidifiers at the Riverside and Toxaway Mills of Anderson have been let in the office of J. E. Serrine & Co. The Grinnell Company of Charlotte secured the contracts. This company also secured the contract for the installation of humidifiers in the plant of the Pendleton Manufacturing Company at Pendleton. Work on the three projects will start at once.

**Gaffney, S. C.**—Plans have been completed for putting into operation again within the next ten days the Sultrene Mills, on East Robinson street, which was closed several weeks ago under bankruptcy proceedings, according to announcement made by J. B. Johnston, secretary of the Chamber of Commerce. The plant manufactures sport stockings exclusively, having a capacity of 129 dozen pairs per day. About forty persons are employed and the pay roll ranges from \$30,000 to \$50,000 a year.

**Belmont, N. C.**—The Belmont Fabric Company, located north of Belmont, is building 35 new tenant houses, 25 of which are practically completed. Earl Rhyne, formerly of Bessemer City, but who now lives here, has the contract for these houses. The houses are quite an improvement on the old tenant houses at the mills, having electric lights and water.

The mill itself is practically finished, machinery being put in and quite a number of other finishing touches are being made around the place. It is estimated that it will be ready for operation by April 1. F. P. Cuddy will superintend this mill.

The cloth to begin with will probably be a coarse grade of sateen.

**Cuero, Tex.**—Permit has been issued the Cuero Cotton Mills Company to sell stock in a proposed cotton mill to be erected at Cuero, in De Witt county, this state.

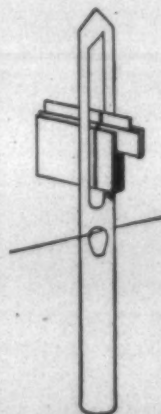
The permit is in favor of F. L. Denison, of Temple; P. M. Keller, of Belton, and A. L. Curtis, of Belton. Mr. Denison is a capitalist and operator of extensive lignite coal mines in Bastrop county. Mr. Keller was for nine years general manager of

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the Belton Yarn Mills, which uniformly made money for the owners, he having a considerable block of the stock. He is well known in cotton mill circles, having been connected with various mills in North Carolina and other Eastern States. Mr. Curtis is an attorney and is the personal counsel of Governor Miriam and ex-Governor Jas. E. Ferguson.

The proposed mill is to be capitalized at \$250,000, of which \$200,000 is preferred, cumulative and participating, seven per cent preferred, with \$50,000 common stock, the directors above named absorbing all the common stock. The city of Cuero is giving a flat bonus of \$25,000 and other interests have contracted to take a large block of the preferred stock. Cuero has one cotton mill now in successful operation.

**Dallas, Tex.**—Business has been suspended by the Fogarty Silk Knitting Company, established here in January, 1920, by J. C. Fogarty, inventor of important features incorporated in the machines used. Operations probably will be resumed in August or September, according to Mr. Fogarty, who plans to make a trip to New York in the near future. Men's neckwear has been the chief product of the company, but sweaters and silk dress goods may be added, Mr. Fogarty said.

**Gaffney, S. C.**—The contract for the erection of 100 new three and five-room houses was let Friday by the Gaffney Manufacturing Com-

pany to Weaver & McMillan, local builders. Work was started immediately, the foundations for two of the cottages being laid the same day. The houses will practically surround the Elm Street School, which is located on property given to the school district by the mill.

The enlargement program, which is being undertaken with a view of operating the mills day and night in the future, involves an expenditure of more than \$100,000, it was stated. Alfred Moore, of Wellford, is

president of the Gaffney Manufacturing Company, which has a capital stock of \$1,600,000.

**Belmont, N. C.**—The annual meeting of the stockholders of the Sterling, Crescent and Acme Mills were held last week. The year's reports were heard and showed a good record, with indications of more progress ahead. The usual five per cent dividend was declared by each of the mills.

R. B. Suggs, secretary and treas-

urer of the Acme Mill, was ill in the Charlotte Sanatorium and unable to attend.

All the officers and directors were re-elected as follows:

Crescent: A. C. Lineberger, president; G. W. Stowe, secretary and treasurer; with the following, and these two, constituting the board of directors, R. L. Stowe, S. P. Stowe, W. C. Wilkinson, D. E. Rhyne and W. B. Peutt.

Sterling: R. L. Stowe, president; S. P. Stowe, secretary and treasurer; these two and the following constituting the board of directors: D. E. Rhyne, J. M. Stowe, J. R. Ross, A. C. Lineberger and G. W. Stowe.

Acme: A. C. Lineberger, president; R. B. Suggs, secretary and treasurer; with the following additional as directors: D. E. Rhyne, R. L. Stowe, S. P. Stowe, R. A. Dunn, and D. P. Stowe.

#### Hosiery Production Lower.

There was a total of 4,515,717 dozen pairs of hosiery, all classes, produced during December, according to the regular monthly report on hosiery production made public by the Bureau of Census, based upon returns received from 329 establishments representing 413 mills.

A comparative summary for November and December, based upon the output of 323 identical establishments, reveals that production in November was greater than that during December, the figures being 4,702,661 and 4,495,537 dozen pairs, respectively.

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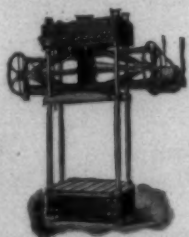
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### No Return on Much Mill Capital

If there is merit in the theory that the time to buy into any class of securities is when that particular industry has apparently reached the bottom depths of adversity, the present may be the time when New England mill securities may be scrutinized for long-pull investment opportunities. Some of these properties of long established reputation are selling less than their net quick assets. Pacific Mills, for instance, which last week sold down to 42, has rebounded on good buying to 50.

Now that the Pacific Mills dividend has gone the way of the Amoskeag and the American Woolen common dividends the three giant textile enterprises of New England are making no disbursement on their equity issues. Amoskeag and American Woolen passed their common dividends in the fall of 1924.

Par value of Pacific Mills capital issue is \$40,000,000. American Woolen's common issue totals \$40,000,000 also; this company pays dividends on its \$50,000,000 preferred. Book value of Amoskeag no-par common shares we have calculated at \$67,756,707.

There are other New England textile enterprises paying no dividends, such as B. B. & R. Knight, with \$20,531,326 capital; Manomet Mills, a large spinning mill, with \$8,000,000 capital; Nashua Manufacturing Company, paying nothing on \$6,200,000 common; and U. S. Worsted Company is paying no dividends on issues totaling \$6,049,217.

Following is a list of the larger New England mill issues on which no dividends are being paid. Par values are given where possible, since they usually represent the prices originally paid for shares, or prices at which excess earnings in form of surpluses were capitalized in stock dividends. But where shares are of no par, latest balance sheet valuations are given:

	Issues.	Amount.
Amoskeag Co.	Com.	\$67,756,707
American Woolen	Com.	40,000,000
Pacific Mills	Cap. stock	40,000,000
B. B. & R. Knight	Com., 1st and 2nd pfd.	20,531,326

Manomet Mills	Cap. stock	8,000,000
Nashua Mfg.	Com.	6,200,000
U. S. Worsted	Com., 1st and 2nd pfd.	6,049,217
Mass. Cotton Mills	Cap. stock	5,000,000
Monomac Spinning	Cap. stock	5,000,000
Nonquitt Spinning	Cap. stock	4,800,000
Otis Co.	Cap. stock	4,080,000
Sharp Mfg.	Com. and pfd.	3,817,000
Hamilton Mfg.	Cap. stock	3,600,000
Arcadia Mills	Cap. stock	3,000,000
Hamilton Woolen	Cap. stock	2,585,000
Lancaster Mills	Com.	2,500,000
Great Falls Mfg.	Cap. stock	2,500,000
Dwight Mfg.	Cap. stock	2,400,000
Nyanza Mills	Cap. stock	2,100,000
Androscoggin Mills	Cap. stock	2,000,000
Tremont and Suffolk	Cap. stock	2,000,000
Fall River Mills	Misc.	23,000,000

Total \$260,419,250

Of course not all non-paying New England mill issues are included in the list above, chiefly because of their small size. To complete the picture, it should be stated that dividends are being paid on a great many other issues, including ones of such importance as \$50,000,000 of American Woolen preferred, \$14,400,000 Farr Alpaca, \$12,000,000 Arlington Mills, \$7,668,000 Pepperell Manufacturing Company, \$6,000,000 Naumkeag Manufacturing, and \$50,000,000 par value of mills at New Bedford and \$20,000,000 at Fall River.

The current textile depression has fallen on New England with such destructive effect that well over \$250,000,000 of capital invested in mills of this section is now making no return to shareholders. Because of multiplicity of small units and the added facts that many of the large Rhode Island units do not publish their dividends, it is difficult to state figures with absolute accuracy, but it seems no exaggeration to state that at least half the capital invested in New England mills is now in the non-dividend paying class.—Boston News Bureau.

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# EDITORIAL

## The Last Half of This Year—

### *Why Put the Skids Under It?*

**F**OR years we have been taught that the mental attitude of the public toward business has a great effect upon volume, and therefore it is difficult to understand why statisticians and leaders of finance and industry are now broadcasting the message that the first six months of 1926 are to be excellent, but are intimating that there may be a considerable curtailment of prosperity the last six months of the year.

Why should this pessimistic note prevail, and for what reason does the average man accept these statements as gospel and think in these terms without studying the subject carefully? Is it because men are like sheep, and when a stampede is started they all go in one direction?

When you deal in futures, you deal in uncertainties and there is no one who can predict accurately what is going to happen the first or the last six months of 1926; and since business is so materially affected by what people believe and say, would it not be wiser to predict a satisfactory condition for the entire year?

On what real, constructive theory is the statement based that the last half of the year will not be satisfactory? History has taught us that for many generations you can strike an average of seven good years for every three poor ones, and as we passed through the lean post-war period and are now on the up-grade, why should we look for trouble a few months ahead? Don't most people spend most when they have most? If this is so and the first six months of 1926 are money-makers, won't the last six months be made active by the money spenders?

It is always wise to be conservative and have one's house in order so that if things do not reach the standard of the optimist, it is possible to readjust expenses in order to make a profit even on a reduced volume. But is it wise to deliberately try to create an impression that business will be lean the last half of the year? No industry has ever demonstrated more thoroughly the value of optimism and energy than the automobile trade. If its manufacturers had years ago concluded that the saturation point had been reached and had ceased to expand factories and sales organizations, you would probably today find that our dear public would be satisfied with ten, instead of twenty million cars.

Optimism, energy and progressive methods have sold automobiles where it was seemingly impossible to sell them. It is true that the car industry has depended—to a certain extent—for its prosperity upon the success of all business, so why don't the men—the progressive men that we have in the great automobile industry—try to stem the tide of pessimistic talk about the last half of 1926? If all business is good the first half, should there not be enough momentum, enthusiasm and prosperity to carry us along serenely the second half?

These are questions to be considered and dealt with by everyone with large or small business interests, for we should not accept the predictions of the men who are following the lead of the few, especially when most of these predictions are based primarily on theory.

Let us make the **whole** of 1926 a big year, and not split it in half, keeping ever in mind that all destructive gossip is harmful.

C. A. Musselman

President, CHILTON CLASS JOURNAL CO.



## Practical Discussions

(Continued from Page 23)

back of cards you receive at the front from 88 inches to 120 inches (according to your draft on cards of sliver just twice as heavy as your weight at the front. When the card hands let split laps run there is a singling coming out at the calender roll the length of the draft per inch of the card times the circumference in inches of the lap at that particular time. Also the card strippers can cause light sliver by getting up the end before the card has had time to fill up to its normal load. Next we take the drawing. When lint is allowed to collect around and under the spoon allowing the end from the can to run several inches through the rollers without the frame knocking off will cause the sliver to be one-sixth lighter for a distance of the draft of the machine times the inches fed in. When drawing hands are allowed to set in a full creel of full cans behind the drawing there will be a big variation in weight at the front of the draw frame, as when the cans in the creel get anywhere from half full on down to empty there is more stretch in the drawing behind the drawing frame, causing a lighter slubber roving than should be. Lapping of ends in intermediate and speeder creels causes the roving to be heavier and if the frame hand allows the ends to run just one-half of inch before he sets in a new bobbin of roving that will cause a singling just half the length

of the draft of that particular machine and you may figure that time the draft of all the following processes to the spinning bobbin. If the rollers in card room are not properly oiled this will cause thick and thin places in the roving and when thin, thick or so-called variation in roving, and thin places hit the spinning frames they will most always cause the end to come down. You might safely figure that nine out of every ten ends put up in the card room will cause an end to come down in the spinning room.

Too much tension on fly frames will stretch the roving and not enough twist in roving will cause it to break back in spinning creels and if it doesn't break back it will be stretched, causing the end to be light and the traveler will break it down on the spinning frame. This is just a very few causes that the card room is accountable for in keeping up the ends on a spinning frame and now we will go to the spinning frame itself. First, we will take the roving that is allowed to lay up on top of the creels too long and be handled and broken and allowed to dry out and become soft and fluffy when this roving is set in it will either cause light yarn or break back in creel and most of the time when roving breaks back in the creel it will catch on another bobbin of roving and wind around and break down two ends instead of one. Roving skewers should always have a good sharp point on them and not be allowed to become clogged and choked up, as this has the

same effect on roving being strained as putting on breaks on an automobile while pulling a grade. Next we come to the trumpets in the roving traverse. If these trumpets are allowed to become choked with lint there will be more stretching of the roving and when a lump comes along in the roving it will cause the end to break back. Next we come to the rollers. You may have seen spinners that would tell you that just any kind of old roller would work in the back of a spinning frame and this may be true for a spinner that just wants a roller to turn because it is round. The back and middle roller should be looked after just as much as the front roller, as these two rolls prepare the ends of roving for the main drafting rolls, namely, the front and middle rolls. If the middle roll is allowed to become dry and almost sticks it will form a lump between the back roll and middle roll and at the same time will hold the cotton between the middle roll and front roll and cause a very thin place in the yarn and when the traveler puts the strain on this thin place it will break the end down, and if either the back or middle rolls are allowed to run with worn skins and bad skin laps the fibers will catch to these defects and either split the strands of roving or will collect on rollers until a lump is there and the lump will cause the roving to be cut by the steel roll flutes. I am only trying to give Up and Down some of the defective points on causes of ends coming down on a spinning frame,

as any spinner ought to know the effect of long draft, high speed and shy twist on any spinning frame.

Next on the rollers we should see that they are kept as free from chokes as possible and well oiled at all times, as a piece of iron dragging on another piece of iron as the saddle drags on the roller is allowed to become dry of oil there will be a jerking and prizing motion and is very detrimental to good running spinning. All gears concerning the drafting rollers should be set just as deep as possible without bottoming. The rollers should be set just as close as possible without clinging to both ends of the long fibers, as the cotton we are running now has a much higher percentage of short or immature fibers than it did some years ago. Next we come to the guide wire and the setting of the guide wire over the top of the spindle is very important to good running spinning, as this will cause the end to pull too close to the top of the bobbin on one side. The guide should be free from cut places caused by the yarn wearing the guide. Next we will take the spindle, and as it is well known that too much speed on the spindle will cause the bobbins to jump and make a bad bobbin of yarn as well as make the end run bad. Worn bolsters or bolsters that need adjusting will also cause the spindle to vibrate and cause the end to come down. Crushed spindles should be straightened or replaced by new ones. The spindle should be plumb, that is, in the center of the rings, at all times,

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that doesn't mean plumb at top and bottom, which I will try to explain a little later. The spindle should be kept well oiled. A band that is too large for the whorl will not go to the bottom of the whirl and will therefore cut down on the ratio of cylinder to whirl, and when we think that we are getting a certain amount of turn per inch we are only fooling ourselves and spinning is running bad right on. If Up and Down will examine his lifting rods while he is overhauling his spinning I think he will find that his spindle does not run in the center of the ring from top to bottom of the traverse. I find that a lifting rod will wear at the bottom on the left hand side and at the top at the right hand side, and this is due to the fact that the roller, or lifting truck, on the lifting arm while the ring rail is at bottom has a tendency to roll off and puts the weight of the ring rail on the left hand side of the lifting rod and just the opposite when the rail is at the top of the spindle, causing the rod and lifting rod bushings to wear. You may plumb your spindles at the top and knock them at the bottom but move your ring rail to the center of the stroke and you will see that every spindle is out of the center of the ring which is very important to good running spinning. There are many more causes that will make an end come down, such as worn rings, traveler too large or too small, travelers of the wrong circle, and it will be found that travelers often get mixed to such a degree that it will be hard to detect that some are large and some are small. There are still many other things that will cause ends to break down on a spinning frame but I hope the few suggestions will help Up and Down with his problem. Willing.

#### Answer to Shuttle.

Editor:

In answer to Shuttle regarding how much to lighten on his filling when the cloth is going 4 per cent too heavy. It would depend on what kind of cloth he was making and how much difference there were in the numbers of his warp and filling. If he was making 64x64 print cloth from 30s warp and 40s filling he would have to lighten about 10 per cent on his filling to get his cloth right if it was 4 per cent too heavy. In the first place, he should never let his cloth weights get off that bad. I think 4 per cent is as much as anyone should change on their filling draft, from standard, that would be one tooth on a 25 teeth draft gear, and that is about as small draft gear as we usually find. Most draft gears are larger.

If the warp yarn and the roving are kept approximately right it is very seldom we have to change all the draft gears on filling to get the cloth right and never more than one tooth either way, and if I were going to change my numbers more than 4 per cent I would change my travelers also.

Now, in regard to keeping numbers and cloth weights right I am going to give you some experience I have had. All cotton doesn't draft

out the same on the spinning. As a rule the cotton that spins the worst will spin out lighter from a certain hank roving than cotton that runs better will. Now, most spinners and carders, when they get a little better grade of cotton and their spinning gets heavier, will put off lightening upon on this stock just as long as the boss will let them and when they do lighten up it will be just enough on the filling to keep the cloth nearly right and they will continue to run their warp too heavy. The result is that they are stocking the weave room with warps a number or two too heavy from cotton that could have been spun on the light side and still run good. Just about the time the weaving is filled up with this heavy warp they put in a new lot of cotton that don't spin so well, and your roving begins to get light but the boss won't let the carder heavy up on the roving because the cloth is heavy, and you have to get your filling about three numbers on the light side in order to take care of these heavy warps. It is only a case of your reaping what you have sown, and you should not curse any one but yourself. While of course you have lost money for the company and have put extra work on yourself.

A good plan is to have scales near the warpers where you can weigh every beam as they come from the warpers and be sure you don't let your warp yarn get too heavy, especially when your work is running good on the spinning. If you will do this you won't have much trouble keeping your cloth weights right. I always try to keep my cloth on the right side as much as possible because if it gets too light we can always heavy up on our work without hurting us, while sometimes it will tear us up if we have to lighten on our work. Another thing, the boss will come to you smiling when the cloth is too light. I won't put down here just what they will sometimes say when we are on the heavy side.

Experience.

#### Answer to Mr. Help.

Editor:

In answer to Mr. Help, will say I don't see very much he can do other than to see that his steel rolls all have good points and necks, see that levers are level, with none touching the board. See that stirrups are not riding either steel roll and that top rolls are kept oiled and cleaned with all "chokes" out at end, also that bottom of skewers and roving sets are in good shape.

I would rather think the main trouble is in the card room, either not enough twist, or roving stretched, or both. There are four gears on a roving frame that must bear the correct relation to each other or you will have just such trouble, namely, draft, twist, lay and tension.

Usually when going on a hank roving these gears are figured correctly, but the roving will be heavy and the carder will change draft and lighten the roving, sometimes several teeth, and never think about the other gears. Have him check



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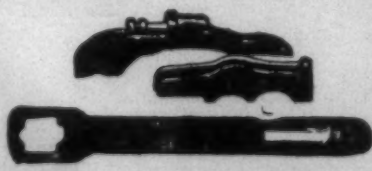


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over these and make good, firm roving, laid close but not piled, with enough twist to keep it from stretching, and then you can increase your roll speed if you want to. Hand Made.

#### Answer to Spindle.

Editor:

In answer to Spindle, will say it is always better to figure the draft, but a spinner should use his head in making the allowances necessary. For instance, cotton will not always spin out the same. Some will spin out light, some will spin out heavy with exactly the same hank roving. So check up on this and see how your cotton spins out. You can find this if you find out exactly what hank roving you are running. Not what the carder calls it, but what it is.

You will probably note that you will have to run one or two teeth less than the figured draft gear on account of the twist in roving and yarn. It depends on the cotton as to how many teeth you are running less than figured draft, but you will find usually one tooth. So follow this rule and you won't miss it far. Divide number of yarn by hank roving for draft, divide draft constant by draft, for draft gear, then use one tooth less and you won't be far wrong if you use the exact hank roving. Hand Made.

#### Answer to Shuttle.

Editor:

In answer to Shuttle as regards changing the cloth weights, will say that I have found the following way of figuring this to be very effective:

First, consider the weight of cloth, also the number of filling as so many points. Divide filling points by cloth points. This gives you the number of filling points to one of the cloth points. Next divide filling points by number of teeth in draft gear. This gives you the number of filling points to one tooth in draft gear. Then multiply what you get by the first division by the number of points that cloth is heavy or light. This will give you the points that filling is heavy or light. Now divide that by what you get in the second division of this rule. This will give you the number of teeth to change in draft gear. Example: Broad sheeting, 150 yards per lb., 28s filling, 33 draft gear, with cloth 5 points heavy. 2800 divided by 150 equals 18.6. 2800 divided by 33 equals 84.8. 18.6 multiplied by 5 equals 93. 93 divided by 84.8 equals 1 tooth nearly.

If this is not clear I will explain further if Shuttle will give his cloth weight number of filling and draft gear used.

Note—The above is given on the assumption that the humidity is kept constant in both departments all the time. If it is not, there is no way under the sun to keep cloth weight. Nobody.

#### Will Discuss Rayon.

The Georgia Section of the Affiliated Technical Societies, including the American Society of Civil Engi-

neers, American Institution of Electrical Engineers, American Society of Mechanical Engineers, and the American Chemical Society will have a joint meeting in Atlanta on March 18th.

The principal topic of discussion will be "Rayon, a Chemical Fibre."

#### Aluminum Paint.

The Aluminum Company of America has just issued a booklet, "Aluminum Paint," giving very interesting and useful information on how to select the proper paint, how to prepare it and how to use it. The growing use of aluminum paint for industrial purposes has developed a need for further practical information on the advantages of this paint and the booklet gives very complete and practical information on the subject. The text matter is by Junius D. Edwards, assistant director of research, and Robert I. Wray, research chemist, both of whom are recognized as authorities on the subject.

Copies of the booklet may be had by addressing the Aluminum Company of America, Pittsburgh, Penn.

#### New England Mills Will Display Goods

Providence, R. I.—Progress made by textile mills in New England in meeting changed conditions in the industry and in adapting their plants to meet new demands will be shown in exhibition planned by a number of the manufacturers in this section of the country.

The first of the proposed series of "educational exhibits" opened Tuesday at the Rhode Island Hospital Trust Company. W. S. Pepperell, president of the Rhode Island Textile Association, in explaining the purpose of the exhibition, declared its aim "is to demonstrate the possibilities of meeting changed conditions in the textile business and the competition of Southern and foreign mills. Such exhibitions, he continued, when held by various mills, will give an effective answer to the 'lose talk' that New England has lost its prestige in the industry."

The exhibits will show a number of the mills have almost abandoned the manufacture of old lines of goods which they have sold for many years. The Grosvenordale Company, which manufactured sheetings, muslins and long cloths for about 100 years, presents the new fabrics made up of cotton and rayon, cotton mixed with silk and cotton mixed with wool.

New lines of broadcloth for shirts and dress goods, cotton and silk voiles, plain and fancy crepes in rayon and real silk, sateens, twills and pongees are a part of the exhibit. Among the other goods on display are bengalines, poplins and a special line of underwear fabrics of both cotton and silk ranging from corset and brassiere cloth to the finest, sheerest weaves for women's wear. The exhibit also includes a broad range of lining cloths and pocketings and rayon alpacas.



### Carolina Cooperative Council Meets

THE January meeting of the Carolina Co-operative Council proved to be one of the most interesting and profitable meetings that the council has held up to this time. This council, which is an organization of the Carolina Cotton and Woolen Mills Company, of Spray, comprises about 260 members from the eleven plants of the company. The membership is composed of the managing personnel from the general manager and treasurer down to loom fixer, the greatest single group in the organization being the foremen. Membership is voluntary but practically 100 per cent of eligible members are enrolled in the organization. This council was formed in September, 1920, and has held monthly meetings since that date, with the exception of two months during the summer. Each year the council enjoys a summer picnic and a Christmas banquet. The Christmas banquets are gala occasions, when no expense or time is spared in furnishing food, decorations and entertainers. This past Christmas the council had a troupe of vaudeville actors to do the entertaining.

During these years that the council has been organized it has had all types of meetings. It has had as its speaker guests some of the

leading orators of the country, as well as some of the leading industrial men of North Carolina and other States. It has discussed its own mill problems from a technical and general standpoint. At its January meeting it tried a new angle.

This last meeting was in the nature of a heart to heart talk between the mills and the council on the conditions and problems of the mill organization. The feature of the meeting was a very interesting and inspiring address on "Cotton Buying and Selling." This address was given by the organization's cotton buyer, who does all the purchasing of American and China cotton for the mills.

Following the talk on cotton, the manager of the department of production and cost gave on moving picture slides the comparative production reports for all mills during 1924 and 1925. This comparative report gave details of the pairs, yards or pounds produced, as well as the percentage of operation of each plant and the number of loom days that each plant operated during the two years. It was a strikingly noticeable fact that in practically every instance the production was greater from the standpoint of efficiency (according to the percentage figures) as well as the total production.

The plant newspaper run by the

mills was discussed by the manager of the personnel department, who is also editor of the plant paper—The Arrow. A very searching questionnaire was distributed to the members, asking for their comments and suggestions on the newspaper and bespeaking their co-operation for a campaign soon to follow.

#### Moving Pictures.

The council enjoys two reels of moving pictures of a general nature at practically all the meetings. These pictures, either of a technical or general nature, are shown at the last part of the program.

The council has become an institution with the foremen and others in the council organization. It has its own constitution and by-laws, regular standing committees and also has certain adopted songs.

### State College Textile School

F. Gordon Cobb, secretary of the Southern Textile Association and general manager of the Lancaster Cotton Mills, Lancaster, S. C., addressed the textile students of the North Carolina State College previous to the meeting of the Spinners' Section of the Southern Textile Association.

Marshall Dilling, a former president of the Association, also addressed the students.

Mr. Cobb has several State College textile graduates in his employ and also has a son taking the textile manufacturing course at the school.

State College was well represented at the meeting of the Spinners' Section of the Southern Textile Association, the following men being present:

C. M. Black, class of 1904, Supt., Borden Cotton Mills, Goldsboro, N. C.

David Clark, class of 1895, Publisher, Southern Textile Bulletin, Charlotte, N. C.

J. W. Clark, class of 1906, President, Randolph Mills, Franklinville, N. C.

L. R. Gilbert, class of 1907, Supt., Caraleigh Cotton Mills, Raleigh, N. C.

J. H. Haddock, class of 1915, Research Department, Erwin Cotton Mills, Durham, N. C.

Carl R. Harris, class of 1917, Assistant Supt., Inman Cotton Mills, Inman, S. C.

D. H. Hill, class of 1909, Associate Editor, Southern Textile Bulletin, Charlotte, N. C.

E. B. Manning, class of 1921, Designer, Rosemary Mfg. Co., Roanoke Rapids, N. C.

J. E. McGee, class of 1912, Supt., Carding and Spinning, Rosemary Mfg. Co., Roanoke Rapids, N. C.

The junior and senior textile students also attended the meetings.

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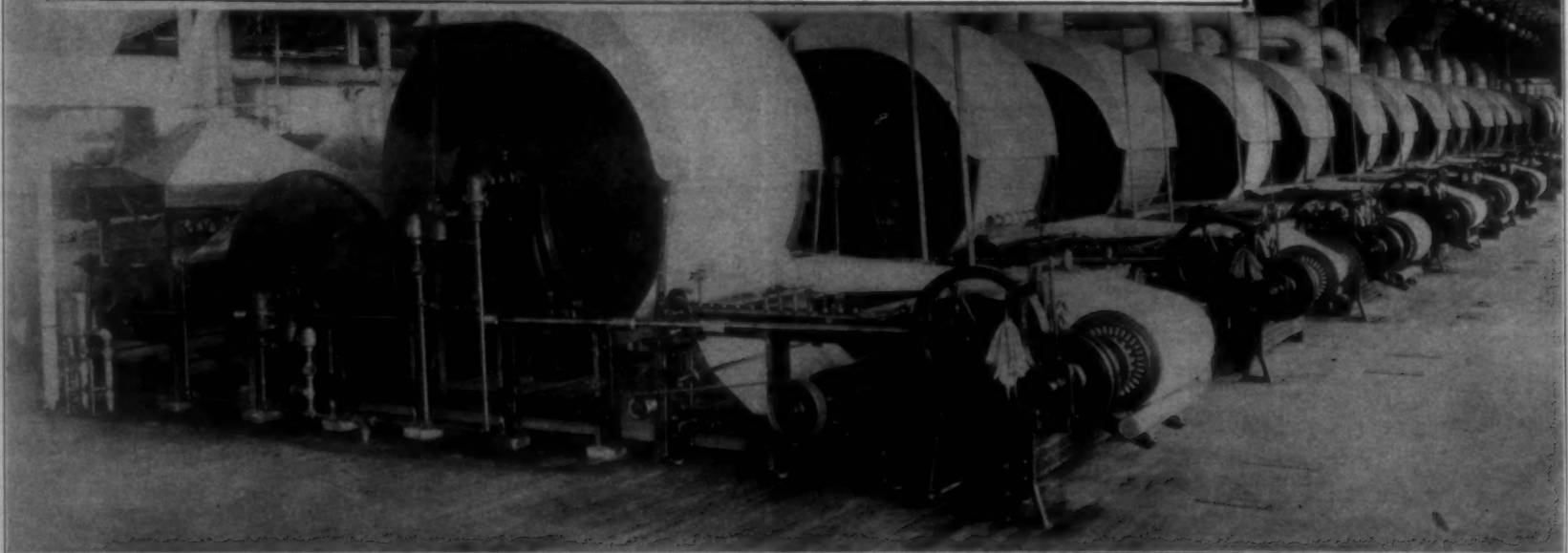
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## Cotton Mill Processes and Calculations

(Continued from Page 18)

- E Loom Handle (broken off at top).
- F Shifting Lever.
- G Fork Frame.
- H, J, Filling Fork on Breast Beam.
- K Filling Thread.
- L Grate or Lay.
- M Lay.
- N Cam Shaft.
- P Stop Motion Cam.
- Q, R, Oscillating Bar.
- S Spring to Shift Belt on Loose Pulley.

### Filling Stop Motion.—OPERATION.

Fig. 51 shows position of parts when loom is running.

Loom handle E is pulled over so that belt is on tight pulley. It is held by the notch in loom beam, otherwise the spring S would shift belt on loose pulley.

Cam P keeps bar Q oscillating. As long as the filling is intact in the loom, when the lay beats up it will raise fork J, H, in the position shown, so that oscillating bar cannot catch the claw H, and loom will continue to run.

If filling should break or run out, the heavy end H of fork would drop down, the bar Q would catch the claw H and pull forward the fork frame G, and through lever F, knock loom handle out of notch. The spring then shifts belt, and stops loom.

266. Care must be taken to keep filling fork in exact adjustment. If one of the tines should be bent so that it would strike the grating, instead of passing through, the grating would lift the fork every time, whether filling were present or not, hence loom would not stop for broken filling. The fork

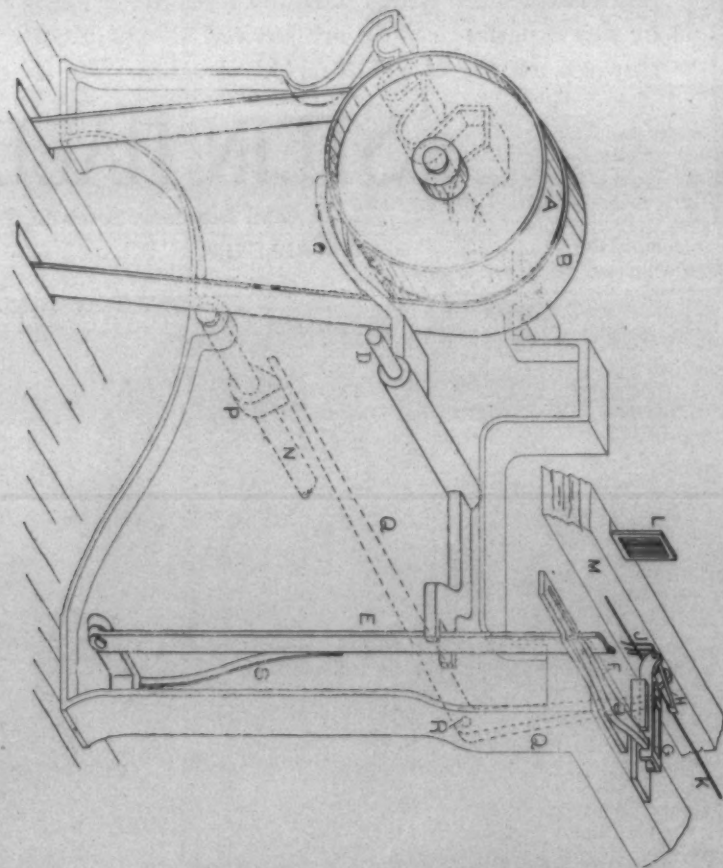


Fig. 51. Filling Stop Motion.



must not project too far through the grating, as that would draw out more filling than is necessary to reach across cloth, and thus make puckers or loops of loose filling at the selvage.

267. Another stop motion is for stopping loom whenever shuttle, from any cause, fails to properly enter shuttle box. It is called "dagger stop motion" or "protector." The finger which is pressed by a spring against swell of shuttle box is connected with a short stiff piece of steel called a "dagger."

This dagger, being attached to lay, goes forward with it at every beat. In a normal position it is arranged to knock out the loom handle at every beat. But when shuttle has properly entered loom box, the swell moves out and changes position of dagger so that it will not strike loom handle. This keeps loom from running when shuttle is not properly timed.

268. Another stop-motion used on the modern looms is the warp-stop motion. In case an end breaks, by this motion the shipper lever is thrown and loom stops.

269. In the steel harness stop motion the heddles themselves are used as drop wires and so detect a broken thread. The heddles are suspended by the heddle bars which pass through slots in the upper parts of heddles. Just below these slots through eyes are drawn the warp threads. A long flat casting called the stop motion girt, which extends between the harness, is bolted to the side of the loom. This girt separates the harness and holds them in position to resist the action of the feeler bar should a heddle drop down and be caught between the feeler bar and the girt. The feeler bars get their motion through a small connecting rod and follower which works on a cam on cam-shaft. A coil spring holds the cam follower against cam. Beside this cam and forming a part of the same casting are two projections. Normally these projections just clear a small casting, fastened to the same stud or casting holding the cam follower. When a heddle drops the feeler bar strikes it, the cam follower is thus prevented from following the cam and the small casting (on the shaft with the cam follower) is moved out of its position in such a way as to be struck with one of the projections beside the cam, thus moving the whole link on which the cam follower is fastened. This motion of the link is communicated to the shipper handle which throws the belt to the loose pulley. When a heddle does not drop, the feeler bars oscillate back and forth. The cam follower moves around the cam and the knock-off is held out of the way of the projection or lugs on the hub of the cam and the loom continues to run.

270. The cotton harness stop motion operates on the same principle as that of the steel harness stop motion, except that drop wires used as detectors in connection with the ordinary twine or cotton heddle, in the place of the steel heddle. The single thread stop motion differs from the others in that only one thread is drawn through each drop wire instead of two or more. This stop motion can be used with any number of harness, especially on Jacquard looms.

#### Shuttle Derangements.

If by any accident to the dagger stop motion or otherwise, a shuttle should be in the warp shed at the time when the shed is closing, the warp threads would be broken throughout the length of the shuttle. Such an accident is called a "smash." A shuttle may get out of time from any one of several causes. The loom may not have "power" enough to drive shuttle home. It may have too much power and drive shuttle against picker and rebound entirely out of box, or it may rebound so far that the picker cannot give it a sufficient lick for the next pick. The swell may be set too tight or too loose. The shuttle may be damp or gummy. Any part of the

(Continued on Page 42)

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## 1925 Foreign Trade in Cotton Cloths

E. A. Mann, Textile Division, Department of Commerce.

UNITED States exports of cotton cloth aggregated 543,314,000 square yards valued at \$85,011,000 in 1925, compared with 477,815,000 square yards with a value of \$78,204,000 for 1924—an increase of 13.7 per cent in quantity but of only 8.7 in value. In contrast, American imports of cotton piece goods declined from a total of 177,386,000 square yards valued at \$37,703,000 in 1924 to 109,243,000 square yards worth \$26,424,000 in 1925—a decrease of 38.4 per cent in volume and of 29.9 in value.

### Unit Prices of Exports Declined and of Imports Advanced.

The average unit price of the exports of American cotton cloth declined from \$0.1637 in 1924 to \$0.1565 in 1925, while that of imports of foreign piece goods advanced from \$0.2125 in 1924 to \$0.2419 in 1925. Both New York and Manchester quotations on eight representative cotton gray cloths were lower in 1925 than in 1924, according to the Textile Division's compilation of international cotton gray cloth prices. British goods constituted approximately 85 per cent of American imports of cotton cloth in both 1924 and 1925. The rise in unit costs of imported piece goods, therefore, may be regarded as a confirmation of the general belief that a greater proportion of the better grades are being brought into this country.

### Imports of Cotton Cloths Analyzed.

The 1925 imports of cotton cloth into the United States comprised 75,397,000 square yards of unbleached goods valued at \$15,423,000; 4,832,000 of bleached worth \$1,584,000; and 29,014,000 of colored, dyed, printed, etc., and woven figured goods, with a value of \$9,417,000. Comparative figures for 1924 are: Unbleached, 114,730,000 square yards, \$21,889,000; bleached, 5,704,000 square yards, \$1,558,000; colored, etc., 56,952,000 square yards, \$14,257,000.

Imports of specified kinds of cotton cloth through the customs districts of New York, Boston, Philadelphia, Chicago, and San Francisco have been tabulated since February, 1924, but the first complete month's returns were for March of that year. Unbleached poplins, broadcloths, madras, oxfords, and other shirting constituted 56 per cent of the total volume of these imports during the 10 months, March to December, 1924, and 57 per cent in the calendar year, 1925. Receipts of these shirtings reached their peak in January, 1925, when they amounted to 13,540,000 square yards. After that month, they declined steadily until they touched the low level of 1,359,000 square yards last August; since then, the imports of this class of goods have averaged about 2,500,000 square yards per month. The average unit price of these unbleached shirtings advanced from \$0.197 in 1924 to \$0.2035 in 1925.

### Monthly Trend of Cotton Cloth Imports.

The entries of specified kinds of cotton cloth through the aforemen-

tioned customs districts constituted 89 per cent of the total cotton cloth imports in 1924 and 87 per cent in 1925. They, therefore, form a fairly accurate index of the American market for foreign cotton goods.

### Imports of Cotton Cloth by Commercial Classifications.

A marked decline was also registered in the imports of sateens through the customs districts of New York, Boston, Philadelphia, Chicago, and San Francisco in 1925 as compared with the last 10 months of 1924. Receipts of sateens, woven with not more than seven harnesses, totalled 20,677,000 square yards valued at \$3,655,000, and of those woven with eight or more harnesses 2,953,000 square yards with a value of \$888,000, during the period, March to December, 1924. In 1925 the imports of the first class declined to 5,994,000 square yards, worth \$1,355,000, and of the second class to 2,794,000 square yards, although the value of the latter, \$1,023,000, was considerably higher. The entries of lawns, organdies, nainsooks, and similar fine goods of average yarn number above 40s, increased from 7,973,000 square yards valued at \$1,851,000 for the last 10 months of 1924 to 11,746,000 square yards with a value of \$3,268,000 in 1925.

The average unit value of sateens, woven with not more than seven harnesses, advanced from \$0.177 for the last 10 months of 1924 to \$0.223 in 1925; that of sateens, woven with eight or more harnesses, rose from \$0.30 to \$0.366; and the average unit price of lawns, organdies, etc., increased from \$0.232 to \$0.278.

### Exports of Cotton Cloth to the Principal Markets.

Cotton duck comprised 11,670,000 square yards, valued at \$5,073,000, of the 1925 cotton cloth exports and 9,130,000 square yards, worth \$4,174,000, of the comparative shipments for 1924. The gain in exports of other classes of cotton cloth, amounting to about 63,000,000 square yards, was distributed as follows: Unbleached, 18,500,000; bleached, 10,500,000; printed, 14,000,000; piece dyed, 13,000,000; yarn dyed, 6,500,000. TWO—1925 Foreign Trade in Cotton

The Philippine Islands recovered their pre-war supremacy as an export market for American cotton piece goods in 1925, supplanting Cuba, which held first place by a comfortable margin in 1924. The shipments of cotton cloth, other than duck, to the Philippines rose from a total of 67,184,000 square yards in 1924 to 79,239,000 in 1925, while exports to Cuba fell from 79,775,000 square yards in 1924 to 65,559,000 in 1925. Increases were also registered in sales to Haiti, Canada, and Mexico in 1925 as compared with 1924, while shipments to Central America and the Dominican Republic showed little change.

### Principal Sources of Cotton Cloth Imports.

As previously stated, the United Kingdom supplies the bulk of the United States imports of cotton



cloth. Japan ranks second, with France and Switzerland competing for third place. The amounts re-

ceived from each of these countries in 1924 and 1925 are given in the following table:

United States imports of cotton cloth during 1924 and 1925

	Square yards	Value	Square yards	Value
France	6,188,162	\$2,187,267	2,482,412	\$1,020,344
Switzerland	5,200,013	1,376,542	2,520,436	581,995
United Kingdom	150,651,466	31,051,210	91,518,754	21,988,435
Japan	9,228,439	1,441,000	5,373,064	790,050
Other countries	6,117,574	1,647,422	7,348,583	2,043,302
Total	177,385,654	37,703,450	109,243,249	26,424,126

### Al Fairbrother Gets Some Neckties

Col. Al Fairbrother, of Greensboro, has a way of his own in replying to people who send him neckties on trial. He recently received a shipment which was the cause of a literary outburst. The letter he sent in return follows:

"Greensboro, N. C.,  
"Feb. 10, 1926.

"Elmwood Knitting Mills Co.,  
"640 Main Street,  
"Buffalo, New York.

"Attention: E. Tipp, Manager.

"Gentlemen:

"Your circular letter containing 'Four Beautiful Neckties' came duly to hand. Inasmuch as several other necktie approval houses have sent me the same kind of ties—instead of just four-in-hand I now have sixteen in hand.

"I am holding them all for storage. I am a great believer in 'system.' It is the main-spring of success. Believe me, my dear Mr. Tipp, system is the Stuph.

"The way I do is to hold the neckties subject to order of the sender, he being obliged to send a man or a personal representative to do the packing, and for a small fee I deliver them to him. I also charge a small fee for opening the packages, and then charge 10 cents for each 24 hours they are in my possession. That is the regular fee. Understand they charge, in large cities where they have depots. My fee for opening a package of four 'beautiful neckties' is only 50 cents. That is pretty cheap but by doing my own washing and ironing I can afford it. You said to keep the ties five days and then send them back or send you \$1.50. That would make our account stand as follows, namely:

"Opening package, 50 cents; five days storage, 50 cents; total, \$1. By four neckties, \$1.50.

"I take it by the time this reaches you and I get a reply another five days will have elapsed, which, not counting the 50 cents fee for delivering the package on your order to your personal representative, would make you owe me a balance of 50 cents or one dollar. We will figure that out later.

"We have some stores here in this town, home merchants who pay rent; who take an active part in our city's building; who respond to calls of charity and progress, and I feel that all citizens should patronize them, always—and for that reason I do not indorse your scheme at all. Some one said 'A sucker is

born every minute'—but the neckties seem to come in faster than that.

"You, my dear Mr. Tipp, can readily understand that if I had nothing to do but receive neckties and remit for them, especially when I didn't want them and didn't need them, I would be in one heluva fix. That is why I charge for my services if I serve. If this isn't satisfactory about the charges send your man down and get the ties.

"I know you are a busy man, Mr. Tipp, but your expression of friendship in sending me the ties on approval makes me feel that I have found a true friend in you. Do you know Mr. Montgomery Ward? He lives in Chicago. He does not send the ties but, being a friend of mine, also, he first doubtless heard of me and got my name—he sends me a nice catalogue every once in a while with colored pictures in it. It is a great work.

"Sometime I would like to visit a big city and see the tall buildings. I may come to see you in the spring. How much does a room in a hotel cost in Buffalo? I mean one without a bath. I could take a bath before I start and save some expense.

"By the way, could you use a good 'coon dog?

"Is there much static in Buffalo?

"Do you know a good dandruff cure? I feel that maybe I'm getting the mange.

"Well, it is getting late, so I must close for this time. Please excuse haste and any bad spelling, as I have an in-growing toe-nail.

"Yours respectfully,

"AL FAIRBROTHER."

"P. S. Seems that the league of nations fellows are going to get away with it, doesn't it? Say, that young fellow Bob LaFollette would be a good one to neck-tie to.

"A. F."

"P. S. If I come up in the spring I'll bring that 'coon dog if you think you could use him, and also had I better bring my saxophone?

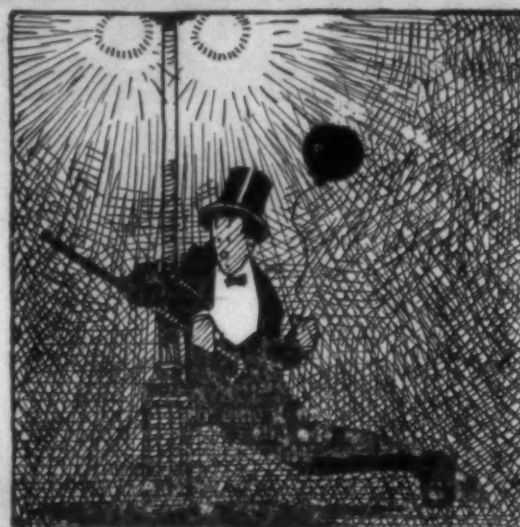
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# STARCH

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# BARBER

SPINNING & TWISTING TAPES

## Cotton Mill Processes and Calculations

(Continued from Page 39)

picking mechanism may be broken, or deranged, such as pick cam, lug strap, picker stick or picker. The rivet in shuttle may work out and keep shuttle from entering box. A screw may work up in race plate and catch shuttle. Either of the last two faults might cause shuttle to fly out of loom. Other causes for shuttles flying out might be improper position of picker, or trouble with the parallel motion at bottom of picker stick.

### Automatic Looms.

272. Considerable experimenting has been done with a view to building a loom that will run continuously and not stop to renew the bobbin when the filling gives out. One loom takes its filling from cones of yarn standing on the floor on each side of the loom. Another is arranged to automatically exchange the shuttle containing an empty bobbin for one containing a full bobbin. Another automatically throws the empty bobbin out of shuttle, and takes in a full bobbin. On this loom, the full bobbins are mounted on a skeleton cylindrical rack or magazine, convenient to the bobbin-changing device. This is the Northrop loom, sometimes known as the "magazine loom." The automatic loom has been the means of saving much labor in the weave room. In general there are two kinds of automatic looms in use, the Northrop loom, which is a bobbin changer, and the Stafford loom, which is a shuttle changer. The Northrop loom uses one shuttle continuously and changes the bobbin while the loom is in motion. The Crompton & Knowles loom changes the shuttle also while loom is in motion but the Stafford loom stops for a few picks while the shuttles are being changed. In the Stafford and Crompton & Knowles looms about nine shuttles may be used for each loom, eight being held in the magazine while the other shuttle is running in the loom.

273. Variation in design of cloth may be made by varying the style of weave; the colors of warp; the color of filling; or the character or weight of materials woven; or by making any combinations of the foregoing. The style of weave is varied in the majority of cases, in connection with other variations.

Plain intersections of warp and filling in regular order is known as "plain weave." It may be made with two harnesses or with four harnesses coupled together and working as two. Four harnesses are used for plain weaving when the warp threads lie very close together, say more than 70 per inch. The cloth weaves in this way with less chafing in the process of shedding. Some weavers prefer this arrangement even with 60 threads per inch.

### Twills.

274. Twill weaving is the simplest variation from plain weaving. It may be done with any number of harnesses above two. It is generally designated "three-leaf," "four-leaf" twill, etc., according to number of harnesses used.

In plain weaving the harness cams may be placed on cam shaft (which, as was shown (250) revolves half as fast as crank shaft) because the pick cams on this shaft cause two picks to be made for each revolution.

Two harness cams on this shaft will cause two sheds, being one shed for each pick.

275. In twill weaving, it is also necessary to produce 1 shed for each pick. If 3 harness cams are used, each cam will make a shed, and it is therefore necessary to have the 3 cams revolve once during 3 picks, or during  $1\frac{1}{2}$  revolutions



of cam shaft. Hence harness cams must be put on another shaft, called the "auxiliary shaft," which shall revolve in proper relation to cam shaft, that is 3-2 as fast for three leaf twill and 4-2 for 4 leaf work, etc. This is usually a short shaft, near cam shaft, and geared to it in the required ratio. Auxiliary shaft is sometimes supplied with several sets of cams with gears to correspond, so that a change may be quickly made from 2 to 3, 4, 5, etc., leaf work, when required.

276. Cam twills are sometimes described as 3-2, 1-4, 2-1, etc., meaning a twill woven with 3 harnesses up, 2 down; 1 up, 4 down; 2 up, 1 down, etc. The mechanism in cam weaving is such that when cams are once arranged for a piece of cloth, say 3-2, this cannot be changed without changing the cams. They may be set to raise in succession any 3 of 5 harnesses while the remaining 2 are down, but not to raise 2 while 3 are down. This fact limits the possibility for wide variations of design in cam weaving.

#### Tape Selvage.

277. Cloth is sometimes required with tape selvage, which is a narrow strip, say  $\frac{1}{2}$  inch wide, twill woven at edge. This is produced by separate cams operating separate little short harnesses at edges of cloth. The arrangement for doing this work is called the "tape selvage motion." The harness, jacks, cams, etc., for the purpose are sometimes called "baby harness," baby jacks," etc.

#### Dobbies.

278. An arrangement for harness lifting to give a wider variation, is the "dobby head." This is a frame placed on top of loom, and carrying a number of levers equal to the number of harnesses desired. Each lever is connected at one end to its corresponding harness. The other end is arranged to be pulled up at any required time by an oscillating bar worked by the loom. A broad endless chain called the "pattern chain," determines the order in which the oscillating bar will lift the harness.

279. When the cloth has been designed, and the order of harness lifting determined upon, the pattern chain is arranged with a boss or projection on certain links corresponding with the particular harness to be lifted at any given moment. With a large number of harnesses and a long pattern chain, it is evident that an almost infinite variety of harness lifting may be obtained. About 40 is considered the maximum number of harnesses practicable to use on a dobby loom.

Looms, as ordinarily built for cam weaving, have not harness room for more than 6 to 12 harnesses. Looms for dobby work should be designed with reference to the maximum number of harnesses desired to be used.

280. In cam weaving, when one or more harness is lifted, the others are depressed so that the amount of lift need be only half the opening of shed. In dobby weaving, no harness is depressed, so that the amount of lift must be as great as the opening of shed.

281. Each warp thread must be drawn through an eye of some one harness. If there are 400 warp threads, there must be 400 harness eyes in use. If it is 2 harness work, each harness must have 200 eyes in use. If it is 40 harness work, each harness must have 10 eyes in use. If it were possible to have 400 harnesses, each harness would need but one eye; and with a proper system for lifting any harness at will, the variation in harness lifting would be practically infinite and it would be possible to weave any pattern whatever which depends upon warp threads.

(Continued next Week)

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## Washing Colored Goods

(Continued on Page 12)

ment such goods are expected to receive in the laundry.

### Artificial Silk.

The introduction of artificial silk into all kinds of fabrics has given rise to a new problem to the laundry, since, as it is generally known artificial silks are very deficient in strength, particularly when wetted, and the washing of artificial silk goods calls for more skill and care than probably any other fabric.

The two kinds of artificial silk most generally met with are acetyl silk and viscose silk.

Viscose silk is practically identical with cotton chemically, but its physical structure is very different and while being as inert as cotton chemically, it is much more easily affected by rough handling.

Acetyl silk is rather stronger than viscose when wetted. It differs from cotton chemically and is much more easily affected by chemical reagents and heat.

In the washing of materials made from these silks much depends on the methods adopted. If carefully handled good results can be obtained. It must be remembered that artificial silk is made up of continuous filaments which are only slightly twisted so as to bind them together. The least amount of twist possible is used, as the introduction of too much in the thread dulls the appearance of the silk and affects its softness.

The slight amount of twist in the thread makes it imperative that a silk fabric shall not be stretched or rubbed during washing, otherwise the filaments are broken and a hairy appearance results, while the lustre is seriously affected.

A suitable washing process consists of a careful working of the fabric in a warm, neutral soap solution, rising in warm water and gently squeezing. No starch must be used when finishing the material.

When nearly dried the fabric is ironed with a moderately warm iron, first on the wrong side and afterwards on the face. This helps to revive the lustre of the silk. A hot iron must not be used since acetyl silk melts when subjected to excessive heat. It is advisable to use the iron in the direction of the silk threads. Thus, when ironing a garment with the threads running warp way the iron is moved upwards and downwards and not at right angles to the threads. Similarly, if the silk threads are used in the weft or across the fabric the iron is moved from side to side.

## Texas' Spindleage Gains 33 Per Cent in 1923-24

Dallas, Tex.—The total capital investment in the textile industry, based on replacement cost, in Texas today approximates \$44,500,000, according to Burt C. Blanton, consulting industrial engineer of Dallas, who recently completed a survey on the industry.

Mr. Blanton in his report stated that about 55,400 new spindles were added to the textile industry in Texas during the period 1923-1924

which represents an increase in spindleage of about 33 per cent over the total spindles in place at the close of the year 1922.

The total number of spindles in Texas for the period 1899-1925 are as follows:

Year	Total Spindleage
1899	48,756
1904	68,170
1909	97,628
1914	106,236
1919	131,454
1925	241,158

Today there are 25 cotton mills operating in Texas which enterprises represent a total investment, based on replacement cost, of about \$28,500,000, and there are now approximately 65 textile establishments manufacturing a variety of products in the State.

The net increase in spindles in Texas for the 26-year period of 1899 to 1925, inclusive, approximates 395.07 per cent. The largest increase in spindleage was recorded for the period of 1919 to 1925, aggregating 83.48 per cent.

## 583,192 Bales of Cotton Used in January

Washington, Feb. 13.—Cotton consumed during January included 583,192 bales of lint and 56,465 of linters, compared with 575,271 of lint and 55,701 of linters in December, and 594,010 of lint and 51,437 of linters in January last year, the Census Bureau today announced.

Stocks of cotton on January 31 were held as follows:

In consuming establishments, 1,811,892 bales of lint and 159,875 of linters, compared with 1,717,972 of lint and 135,448 of linters on December 31, and 1,441,699 of lint and 137,367 of linters on January 31, last year. In public storage and at compresses 5,175,834 bales of lint and 69,588 of linters compared with 3,608,066 of lint and 50,723 of linters on December 31, and 3,860,333 of lint and 57,953 of linters on January 31 of last year. Imports during January totalled 62,061 bales compared with 3,447 in December and 54,822 in January last year.

Exports during January totalled 749,967 bales, including 15,368 bales of linters compared with 984,061 bales, including 18,220 bales of linters in December and 1,075,075, including 24,214 of linters in January last year.

Cotton spindles active during January totalled 32,803,156, compared with 33,000,874 in December and 33,320,558 in January last year. Statistics for cotton growing States include:

Cotton consumed during January, 412,242 bales, compared with 399,908 in December and 404,866 in January last year.

Cotton stocks on January 31 were held as follows:

In consuming establishments, 1,122,299 bales, compared with 1,104,001 on December 31 and 887,497 on January 31 last year.

In public storage and at compresses, 4,94,981 bales, compared with 5,383,070 on December 31 and 3,582,245 on January 31 last year.



## Maintenance of Proper Relations Between Employer and Employee

(Continued from Page 7)

narrowly if one is to measure it correctly. In order to be properly safeguarded, the interests of the stockholders—the interests of the customers—the consuming public—and the interests of the employees must all have the fullest consideration of those in responsible charge of an industry; in fact, the first consideration must be the interest of the customer, for, unless he is satisfied and attracted by the treatment he receives, business is lost and the company languishes, unemployment for the worker being one of the results.

Second in importance in the management of the business for the best results to the stockholders is the older and trained employee, an asset to any industry, who can only be replaced, if at all, by one with a background of a generation of similar training and education.

Third in importance, must be placed the capital contributed by the stockholders, which, although first in the order in which the company is built up, is the most easily replaced when impaired; and furthermore, by weighing the interests in the order stated, the stockholder is really given the best and truest consideration for the safeguarding and building up of his interest.

The interests and requirements of the customers are so evidently the concern of all employees and the effect of their neglect so quickly noticed, that there is little difficulty in correcting deficiencies in this part of industry's operation.

The maintenance of proper relations between employer and employee, comprising as it does the training, handling and disciplining of all employees in such a manner as to keep them satisfied and to bring about the most effective production relationship to industry is a much more intricate problem and (as previously stated, is the most important and difficult one with which those in responsible charge of a company are confronted today. It is too soon to speak with confidence of the part played by the Joint Conference Committee in solving this problem, and like many other problems, whether it is a pronounced success or a total failure, will depend upon the manner in which it is handled. Enough evidence is at hand to show that a great deal of value, both to the employer and employee, has come from the establishment of a relationship co-operative in its character and educational to both parties at interest. This relationship having been established, labor can play a large and important part, of tremendous value to itself and the consuming public, of which it forms so large a part, if it will adopt a broader attitude than it has heretofore assumed, and concern itself not only with those things which will further its own narrow interests, but also and principally with those which are of the most benefit to all connected with the industry, in the development of which labor

should be an important and constantly increasing factor.

I have stressed the importance of co-operation between employer and employee. In certain directions there is no limit at which such co-operative effort should stop; in others, however, there is a limit beyond which it is not only unwise to go, but positively injurious, alike to employer and employee, and consequently to the public which both must serve. There is much loose talk among men of high standing but generally with very limited experience in industry, about the democratizing of industry, and giving the men a share in the management of industrial properties. To the extent of a co-operative effort between employer and employee to improve working conditions, or in fact, to better any of the situations in industry that are unsatisfactory to the employees, such as wages and hours of service, well and good; but I maintain that the limit has been passed when enthusiastic reformers advocate giving a voice in the financial and business management to the workman, who is not responsible for bringing the industry into existence, and has no responsibility for the operating results, whether profitable or unprofitable. While many managers have come from the ranks and there is no limit to the possibilities of advancement for the workman, a responsible management is needed to provide for the development and even existence of the industry, a result on which depends not only the interests of the many owners and the public served, but the employment or non-employment of the wage earners themselves. The fallacies of socialism might easily destroy the entire structure, the condition of Russian industry today being an evidence of their effect. Attempts to formulate new social creeds, some times undertaken by reformers and those interested in social welfare, are dangerous as the relations of the different elements of which our social structure is composed are so intricately interwoven that generalizations are almost always wrong in their application and may easily do a great deal of harm.

The prohibition of child labor, for example, appeals in principle to everyone as a good and necessary law, so it is when used to prevent the exploitation of children in industry to their disadvantage or for gainful purposes. This law, if formulated by those of little experience in industry, may, however, be made so restrictive in its application that children will be deprived of all contact with industry and the work-a-day world, thus making it impossible for them to receive that training and experience early in life that so many of us recognize as the most valuable part of our early education. It may be said that of the children gainfully employed in the United States about two-thirds are engaged in Agriculture, Forestry and Animal Husbandry and less than one-fifth in manufacturing and mechanical industries. The total number of children employed in all occupations decreased from two million in 1910 to one million in 1920. We see that the tendency is in the right direction. Let us, therefore, not push this or

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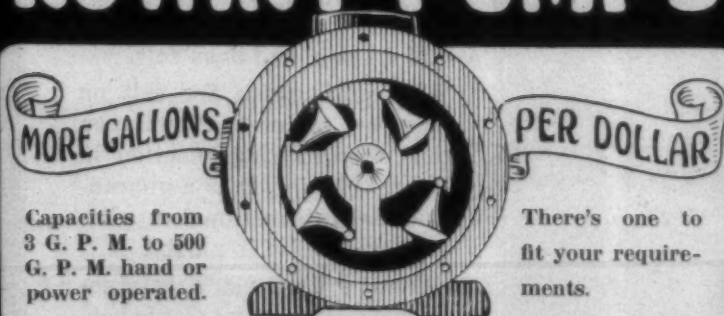
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other similar laws, by unwise enthusiasm, to limits which will result in harm to those whom we all desire to benefit.

We must not fail to recognize that, in all attempts at reform, care must be taken that in our efforts to bring about changes which appear desirable on the surface, contact is first made with those who are in responsible charge of the situations it seems desirable to change, to the end that such changes may be recognized as desirable by those who can most naturally bring them about. It will seldom be necessary to go further, if this first step is well taken and the reforms recommended are really wise and good.

I have confined my remarks largely to the manufacturing industry in the United States and have only touched on a very few of its problems. The manufacturing industry is, it is believed, one of which we can all be proud. Its growth, during the last half century, is one of the greatest achievements in history for improvement in the welfare of man. We can be proud of this growth because it has been accomplished along broader lines than any similar movement in history. This statement can readily be proved by a comparison of the laboring class today with its condition fifty years ago. Not only are their real wages, that is not only is the purchasing power of their wages, much greater than ever before, but they are proportionately greater than any increment which capital is receiving. The labor value of the employer's dollar, that is, the value of the dollar in buying an average hour's work, has shrunk from 100 cents in 1914 to 44 cents, and in addition the employer must bear the comparatively greater proportion of the increased taxes. In 1923, considered a prosperous year, of the manufacturing corporations as a whole, thirty-seven per cent reported a deficit in earnings. The improved condition of the workmen has been brought about not by longer working hours and greater manual effort on the part of labor, but by shorter working hours and by the use of labor-saving devices to an extent many times that which was possible at the beginning of this period.

The wage earners' real wages as stated above, have enormously increased while working hours have decreased and working conditions, as affecting comfort and safety, have improved in every direction. Employers are spending a large and increasing part of their returns for the welfare, education and protection, by insurance and in other ways of employees and their families. The purchasing power of wages in the United States is the highest in the world. In Southern Europe, it is a quarter to a third of our standard; in England about one-half and in Canada about three-fourths.

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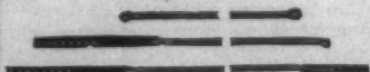
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Commerce, in a radio lecture emphasized to the American radio public that "our manufacturers and distributors should be encouraged by patronizing our home industries."

In continuance of his closing appeal, Mr. Pickard said:

"Only a small portion of textile merchandise and clothing bought by the consumer as imported from abroad is actually manufactured in other countries."

### Labels Claims "Fiction."

"It is because the gullible consumers like to enjoy the fiction that their millinery, or costumes, or cloth comes from Europe that a minority of short-sighted merchants and manufacturers cater to this vanity. Ask for goods made in America and assure yourself of quality at reasonable prices. Such a policy will not alone secure your own protection but will afford employment to labor and business prosperity for American textile manufacturers who always are seeking to serve your interests."

Unquestionably America excels in mechanical arts and in industrial research. The American textile industry is not remiss in such obligations to the public. For example, we can spin a cotton yarn so fine that a thread 150 miles long would weigh only one pound. Modern equipment in the mills produces fabrics unexcelled in any other country.

Elsewhere in his remarks, Mr. Pickard spoke as follows of the part played by rayon in the present textile field:

"Ten years ago we used just a few million pounds of rayon, while last year our consumption ran up to 60,000,000, about 50 per cent more than in 1924. We are now using about the same quantity of rayon as of natural silk and the interesting thing about this unusual fiber is that although it is now measuring pace with the use of natural silk and may soon outdistance it, we are at the same time using considerably larger quantities of natural silk than in the past. Rayon is not harming silk, or cotton, or wool then, but with the virility of its youth and adaptability to almost any requirement it has proved a stimulant to the other members of the textile family."

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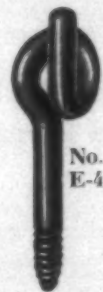
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Gray Goods, Print Cloths, Twills, Sheetings, Pajama Checks, Arcadia Mills,  
Spartanburg, S. C., Clinton Cotton Mills, Clinton, S. C., Hermitage Cotton Mills,  
Camden, S. C., Mills Mill, Greenville, S. C., Osage Mfg. Co., Bessemer City, N. C.

## Cotton Goods

New York.—Cotton goods markets continued moderately active during the week. The greater part of the business consisted of smaller orders wanted for quick delivery, but the volume of this business was sufficient to make a very good total. Prices generally held steady throughout the list. Estimates made here reflect the well sold condition of the mills for the next several weeks. Print cloths and sheetings are sold ahead four to six weeks, tire fabric three to four months and many other goods are from 30 to 50 per cent under order for the next two months.

There was a good demand for printed goods for prompt shipment and for printed rayons, silk and their cotton mixtures. Towels and bedspreads have recently sold very well, and fall sales of flannels have been very encouraging. Export business has shown some improvement. A moderate amount of business has been done for South America and the West Indian ports.

Print cloths were rather quiet during the week.

Spot 80 squares sold East at 13 cents, April South at 12½ cents, and late February at 12½ cents. Moderate sales of 8.20-yard were at 5½ cents and 5½ cents. Other print cloth constructions sold in very small quantities at steady prices. Spot 68x72s were very hard to locate at 10½ cents; March quoted at 10 cents. Bids for March 64x60s were turned down with April the best at 8½ cents. There were sales of 6.40-yard at 7½ cents, 27 and 28-inch 64x60s at 6 cents and 6¼ cents. No more spot 7.15-yard were found at 6½ cents, 6½ cents being paid.

Sheetings were in better demand throughout the week.

February 5.50 yard was sold at 7½ net, and one-quarter paid for March. Some April has sold at 7½ net.

For 37-inch, 48 squares, 4.00 yard, 9½ net was paid in good volume for spot and nearby during the week. There was report on Thursday that additional March goods had come out at one-quarter. For 31-inch, 5.00 yard, 7¼ net was the market; 6¼ net quoted for 40 squares, 6.15 yard, with one-eighth continuing to be heard; 8½ net for 4.70 yard; 10 net for March 56x60, 4.00 yard; 40-inch, 4.25 yard not available before late March at 9 net; 40-inch, 2.85 yard spot at 12½ net, and March at one-quarter; 10½ net for 40-inch, 3.75 yard spot, and one-quarter to one-eighth for contract, depending upon delivery.

While there has been a certain amount of spot call for carded

broadcloths continuing from day to day, it apparently has not been sufficient to keep all mills satisfied. This was reflected in some of the quotations heard toward the close of the week and the ideas of price that some buyers were entertaining. There were bids out of 12½ cents for the 100x60 carded and it was possible to buy one of the fair makes of this style at 12½ cents. Most centers, however, were still asking even money. For a few spots of the 64s pick, 13½ cents had been paid. More and more interest has been favored the 100x60s as against the 100x64s.

There was a fairly large amount of new business in tire fabrics during the week. Most of the mills are sold well ahead for the next several weeks and are not pushing for new business. Tire production is very large and hold promise of developing a good business in fabrics.

Cotton duck was quiet, especially enameling, single and double filling duck. Prices on these constructions were shaded a trifle in some cases. The demand last week was almost entirely for small lots for prompt shipment.

The sales for the week in the Fall River print cloth market were estimated at 50,000 pieces, although prices continued to hold very firm. Trading was confined to small orders for quick goods, fill-ins which mills have been unable to absorb completely. It was evident from the character of buying that buyers are still playing a waiting game, as the hand-to-mouth buying shows.

The 25-inch constructions were also in demand in small volumes sales reported of 40x32, 14.75, 3¼ and one-quarter; 52x44, 11.00, at 4¼ to one-quarter; 56x44, 10.55, at 4¼. Some spot goods of 31½-inch, 48 squares, 8.70, were reported sold at 5¼.

In the 44-inch styles 44x40, 7.25, at 6¼, and 48 square, 6.40, at 7¼, were reported active.

Cotton goods prices were quoted as follows:

Print cloths, 28-in., 64x64s.	6½
Print cloths, 28-in., 64x60s.	6¼
Print cloths, 27-in., 64x60s.	6
Gray goods, 38½-in., 64x64s.	9½
Gray goods, 39-in., 68x72s.	10¼
Gray goods, 39-in., 80x80s.	12½
Brown sheetings, 3-yard.	12½
Brown sheetings, 4-yard.	10¾
Brown sheetings, standard	13¾
Ticking, 8-oz.	22
Denims	17½
Staple gingham, 27-in.	9
Kid finished cambrics	9 a10
Dress gingham	13½ a17½
Standard prints	9½

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# The Yarn Market

Philadelphia, Pa.—The yarn market was quiet throughout the week and conditions as a whole were unchanged from those of the past several weeks. There were some sales for future delivery, involving fairly large quantities, but these were exceptions to the rule. Most of the buying covered small orders that were wanted for early delivery. The day to day business of this character was fairly large. Buyers have showed no change in their policy of taking yarns only when they were needed and in quantities only large enough for immediate consumption. Mills held prices firm, however, and the resulting deadlock produced a very small amount of contract business. Inquiry covered a wide range of yarns and was frequent enough to indicate that many buyers are interested, but as yet unwilling to meet spinners' prices.

The demand for both carded and combed yarns was quiet and mercerized yarn business was under that of the previous week. Dealers who were able to make prompt delivery found a fairly good business through the week, and held prices firm.

The slow sales have not weakened the position of the mills. They are well sold ahead as a rule and are not forced to take on new business at this time. The general price list showed little change and mills refused to take business except at their own prices. With present prices allowing a margin that hardly show replacement costs, spinners see nothing in the situation to warrant lower quotations.

Prices in this market were quoted as follows, although the figures are usually below spinners' quotations:

Southern Two-Ply Chain Warps.	
8s	35 a
10s	36 a
12s	37 a
14s	37 1/2 a
16s	38 1/2 a
20s	41 1/2 a
24s	43 a
26s	45 a46
30s	55 1/2 a56
40s	a60
40s ex.	65 1/2 a66
50s	65 1/2 a66
Southern Two-Ply Skeins.	
8s	34 1/2 a
10s	35 a
12s	36 a
14s	37 a
16s	37 1/2 a
20s	37 1/2 a38
24s	40 1/2 a
26s	42 a42 1/2
30s	44 a 1/2
36s	51 1/2 a
40s	54 a
40s ex.	58 a60
50s	64 1/2 a65
60s	71 1/2 a
Tinged Carpet	3 and 4-ply 31 1/2 a
White Carpet	3 and 4-ply 33 1/2 a34
Part Insulated Waste Yarns.	
6s, 1-ply	29 a

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10s, 1-ply and 2-ply	32 1/2 a
12s, 2-ply	33 1/2 a
16s, 2-ply	35 1/2 a
20s, 2-ply	36 1/2 a
26s, 2-ply	41 a41 1/2
50s, 2-ply	42 1/2 a
Duck Yarns—3, 4 and 5-Ply.	
8s	33 1/2 a
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12s	36 a
16s	37 a
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Southern Single Chain Warps	
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30s	65 a67
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60s	90 a95
70s	1 05a1 10
80s	1 18a1 20
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12s	49 a50
14s	49 1/2 a50 1/2
16s	52 1/2 a
18s	51 a52
20s	52 a
22s	53 a
24s	56 a
26s	56 1/2 a
28s	57 a
30s	60 a
32s	62 a
34s	65 a
36s	72 a
38s	74 a
40s	75 a
50s	80 a
60s	90 a95
70s	1 03a
80s	1 15a
Eastern Carded Peeler Thread—Twist Skeins—Two-Ply.	
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22s	51 a
24s	56 a
30s	59 a
36s	63 a
40s	65 a
45s	70 a
50s	75 a
Eastern Carded Cones.	
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12s	40 a
14s	41 a
20s	42 a
22s	45 a
26s	49 a
28s	51 a
30s	53 a

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Position as overseer spinning, spooling, warping or twisting and winding. Age 35, married. Best of reference; have good record. Will change on ten days' notice. Now overseer but wish to change for wife's health. Will call and look position over at my expense. Address Post Office Box No. 305, Lincolnton, N. C.

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### Superintendent

Now employed by mill in the Piedmont section of the Carolinas making a high grade weaving yarn but would like to make a change in the next few months. Am 44 years old, married, experienced on weaving and knitting yarns. A-1 reference regarding ability, character, etc. Address M. L. G., care Southern Textile Bulletin.

### Wanted

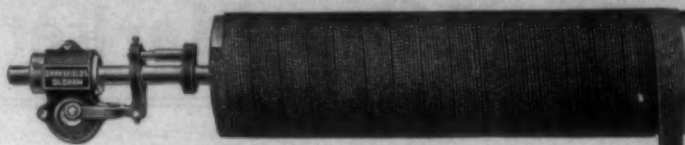
Two spindle plumbers. Good pay for good, experienced men. Address David S. Thomas, Glendale, S. C.

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Wanted—To get in touch with musical family to form permanent orchestra. We play trumpet, saxophone and piano. Only nice people considered. Write me. All letters answered. W. F. Burleson, Alexander City, Ala.

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To do grinding and oversee small card room. Will pay good man \$4.50 per day. Prefer man who understands H & B machinery. Address H. B. care Southern Textile Bulletin.



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During the three months' membership we send the applicant notices of all vacancies in the position which he desires and carry small advertisement for two weeks.

We do not guarantee to place every man who joins our employment bureau, but we do give them the best service of any employment bureau connected with the Southern Textile Industry.

WANT position as overseer carding or spinning or both. Have had 15 years experience as overseer and can give good references. No. 4769.

WANT position as roller coverer and belt man. Can give first class service in every respect. Good references. No. 4770.

WANT position as overseer weaving. Experienced on wide variety of fabrics and can handle weave room in efficient manner. Excellent references. No. 4771.

WANT position as overseer slasher room. Thoroughly understand slashing and have had long experience in a number of good mills. Good references. No. 4772.

WANT position as superintendent. Practical reliable man of good character and excellent training and experience. Now employed. No. 4773.

WANT position as overseer dyeing department. Now handling large job in satisfactory manner, but have good reasons for making a change. Qualified to handle dye plant in first class manner. Would like to correspond with mill needing high class man. No. 4774.

WANT position as superintendent of medium sized mill or overseer spinning in larger mill. Long experience in spinning and can get excellent results. Good references. No. 4775.

WANT position as overseer weaving. Now employed in good mill, but wish better place. Practical experienced weaver who can handle a wide range of goods. Good references. No. 4777.

WANT position as overseer carding, assistant superintendent or office man. Age 29, graduate Georgia Tech textile department, experienced in every department of mill. Good references as to character and ability. No. 4778.

WANT position as master mechanic or electrician. Experienced on both steam and electric drive and thoroughly understand mill machine work. Good references. No. 4779.

WANT position as overseer carding. Long experience in card room as both overseer and second hand and can give excellent references from present and past employers. No. 4780.

WANT position as overseer spinning or weaving. Twenty years practical experience. Seven years as overseer cloth departments. Textile graduate. Age 36. No. 4781.

WANT position as overseer cloth room. Experienced on many cloth constructions and can give references to show excellent past record. No. 4782.

WANT position as overseer carding. Have good place now, but am qualified to handle larger room. Long practical experience, good manager of help. First class references. No. 4783.

WANT position as master mechanic. 18 years experience as master mechanic. Can handle steam or electric power. Strictly sober. Can give good references. Now employed, but can come on short notice. No. 4784.

WANT position as superintendent yarn mill. Married, age 40. Practical man experienced on combed and carded colored and white yarns. Ran last job 11 years. Can get quality and quantity at reasonable cost. Good references. No. 4785.

WANT position as overseer carding or carding and spinning. Reliable man of good character, experienced as both carder and spinner. Best of references. No. 4786.

WANT position as overseer weaving plain or fancy work. Long experience and get excellent results. References. No. 4787.

WANT position as overseer waving or designer. Now employed as designer. Experienced on all kinds of fancy goods. Would like to correspond with one goods mills needing competent man. No. 4778.

WANT position as weave room overseer in mill of 200 to 500 looms, preferably on sheetings, dills, pint cloths, duck or colored chambray. 18 years experience in weaving, I. C. S. graduate. Experience covers wide range of goods in many mill. Good references. No. 4779.

WANT position as master mechanic. Experienced on steam and electric drive, have had varied experience on big jobs. Licensed marine and stationary engineer. College man, will not consider small job. No. 4790.

WANT position as overseer carding. Good man with references and long experience in card room. No. 4791.

WANT position as superintendent yarn or weave mill. Now employed as night superintendent. First class man who can get results. Best of references. No. 4792.

WANT position as superintendent any size mill, yarn or cloth. High class spinner and weaver, understand white and colored goods, plain and fancy. References. No. 4793.

WANT position as superintendent of yarn or twine mill. Now employed, but wish better place. Experienced and reliable man who can give excellent service. No. 4794.

WANT position as superintendent, prefer North or South Carolina. Now employed. Good references to show character and ability. No. 4795.

WANT position as overseer carding or spinning prefer Carolinas. Have run present job for 5 years and given satisfaction. Have had 14 years as overseer. Good references. No. 4796.

WANT position as overseer weaving. Experienced and reliable man who can handle weave room in efficient and economical manner. No. 4797.

WANT position as superintendent or carder and spinner. Qualified to handle either position. Best of references. No. 4798.

WANT position as overseer cloth room or small weave room on plain goods. Experienced as weaver. Cloth room man and shipping clerk. Married, have family. Excellent references. No. 4799.

WANT position as carder or spinner or superintendent small mill. Now employed. Can give first class references. No. 4800.

WANT position as carder or spinner or either. Long experience in number of mills. Best of references as to character and ability. No. 4801.

THOROUGHLY competent superintendent or assistant superintendent wants position. Would take assistant's place. Textile graduate, married, 20 years experience as superintendent on white and colored goods. Know cotton grading, dyeing and finishing. Best of references. Will come to Carolinas or Georgia on trial at own expense. No. 4802.

WANT position as superintendent or overseer large spinning, warping, twisting and spooling department. Now have good job but wish healthier location. Good references. No. 4804.



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Morse Chain Co.
- Drop Wires—**  
Crompton & Knowles Loom Works.  
Draper Corporation.  
Hopdale Mfg. Co.  
Mossberg Pressed Steel Corp.  
R. I. Warp Stop Equipment Co.
- Dryers (Centrifugal)—**  
Roy & Son Co., B. S.  
Tolhurst Machine Works
- Dyers—**  
Southern Artalk Bleach & Dye Works, Inc.
- Dyeing, Drying, Bleaching and Finishing Machinery—**  
Cocker Machinery & Foundry Co.  
American Laundry Machinery Co.  
H. W. Butterworth & Sons Co.  
Franklin Process Co.  
Klauder-Weldon Dye Machinery Co.  
Perkins, B. F. & Sons, Inc.  
Rodney Hunt Machine Co.  
Textile Finishing Machinery Co.
- Dyestuffs and Chemicals—**  
Borne, Scrymgeour Co.  
Bosson & Lane.  
E. I. du Pont de Nemours & Co., Inc.
- General Dyestuff Corp.**  
A. Klipstein & Co.  
National Oil Products Co., Inc.  
Newport Chemical Works  
National Aniline & Chemical Co.  
United Chemical Products Co.  
Wolf, Jacques & Co.
- Dye Works—**  
Franklin Process Co.  
Sayles Finishing Plants, Inc.
- Electric Fans—**  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Electric Hoists—**  
Allis-Chalmers Mfg. Co.  
Link-Belt Co.
- Electric Lighting—**  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Electric Motors—**  
Allis-Chalmers Mfg. Co.  
Charles Bond Company  
Fairbanks-Morse Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Electric Supplies—**  
Chicago Fuse Mfg. Co.  
Cooper-Hewitt Electric Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Elevators—**  
Link-Belt Co.
- Engineers (Mill)—**  
—See Architects and Mill Engineers.
- Engineers (Ventilating)—**  
Bahnsen Co.  
Parks-Cramer Co.
- Engines (Steam, Oil, Gas, Pumping)—**  
Allis-Chalmers Mfg. Co.  
Fairbanks, Morse & Co.  
Sydnor Pump & Well Co.  
—See also Ventilating Apparatus.
- Expert Textile Mechanic—**  
J. D. Hollingsworth.
- Extractors—**  
American Laundry Machine Co.  
Tolhurst Machine Works.
- Fences (Iron and Wire)—**  
Page Fence and Wire Products Assn.  
Wickwire Spencer Steel Co.
- Fibre Specialties—**  
Rogers Fibre Co.
- Finishers—**  
Sayles Finishing Plants, Inc.
- Finishing Compounds—**  
Arnold, Hoffman & Co., Inc.  
Borne, Scrymgeour Co.  
Hart Products Corp.  
E. F. Houghton & Co.  
A. Klipstein & Co.  
National Oil Products Co.  
Seydel-Woolley Co.  
L. Sonneborn Sons Co.
- Finishing Machinery—**  
H. W. Butterworth & Sons Co.  
B. F. Perkins & Son, Inc.
- Finishing Machinery—**  
—See Dyeing, Drying, Bleaching and Finishing.
- Flat Wall Paint—**  
E. I. du Pont de Nemours & Co., Inc.  
U. S. Gutta Percha Paint Co.
- Flexible Couplings—**  
T. B. Wood's Sons Co.
- Floor Stands—**  
Wood's T. B. Sons Co.
- Fluted Rolls—**  
Collins Bros. Machine Co.  
Fales & Jenks Machine Co.  
Woonsocket Machine & Press Co., Inc.  
Whitin Machine Works.
- Flyer Pressers and Overhaulers—**  
Southern Spindle & Flyer Co.  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.
- Flyers—**  
Saco-Lowell Shops.  
Southern Spindle & Flyer Co.  
Whitin Machine Works.
- Frames—**  
Steel Heddle Mfg. Co.
- Friction Clutches—**  
Woods, T. B. Sons Co.  
See Clutches.
- Fuses—**  
Chicago Fuse Mfg. Co.
- Garnett Roll Grinders—**  
B. S. Roy & Son Co.
- Gearing (Silent Flexible)—**  
Link-Belt Co.
- Gears—**  
Charles Bond Company  
Dan Gear Co.  
Ferguson Gear Co.
- Gears-Silent—**  
Charles Bond Company  
Ferguson Gear Co.
- Gear Makers—**  
Charles Bond Company  
Ferguson Gear Co.
- Generating Sets—**  
Fairbanks, Morse & Co.
- Grate Bars—**  
Thomas Grate Bar Co.



# CLASSIFIED LIST OF ADVERTISERS

- Grab Buckets—**  
Link-Belt Co.
- Greases—**  
N. Y. & N. J. Lubricant Co.  
L. Sonneborn Sons, Inc.
- Grinding and Polishing Machines—**  
Gudgeon Rolls—  
Washburn.  
Easton & Burnham Machine Co.  
Roy, B. S. & Son Co.
- Hangers (Ball and Socket)—**  
Charles Bond Company  
William Sellers & Co., Inc.  
T. B. Wood's Sons Co.
- Hangers (Shaft)—**  
Charles Bond Company  
Fafnir Bearing Co.  
Hyatt Roller Bearing Co.  
William Sellers & Co., Inc.  
Wood's T. B. & Sons Co.
- Hardware Supplies—**  
Textile Mill Supply Co.
- Harness Twine—**  
Garland Mfg. Co.
- Harness and Frames—**  
—See Heddles and Frames.
- Heddles and Frames—**  
Garland Mfg. Co.  
Steel Heddle Mfg. Co.  
L. S. Watson Mfg. Co.
- Hoists—**  
Fairbanks, Morse & Co.
- Hopper-Feed Hand Stokers—**  
The J. H. Williams Co.
- Hosiery Dyeing Machinery—**  
Cocker Machinery & Foundry Co.
- Humidity and Air Conditioning Apparatus—**  
American Moistening Co.  
The Bahnsen Co.  
Carrier Engineering Co.  
Parks-Cramer Co.
- Humidity Controller—**  
American Moistening Co.  
The Bahnsen Co.  
Carrier Engineering Corp.  
Parks-Cramer Co.
- Hydro-Extractors—**  
American Laundry Machinery Co.  
Tolhurst Machine Co.
- Indigo Dyeing Machinery—**  
H. W. Butterworth & Sons Co.  
Cocker Machine & Foundry Co.  
Textile Finishing Machinery Co.
- Insurance—**  
Liberty Mutual Insurance Co.  
Knit Goods Finishing Machines—  
Kaumagraph Co.  
Merrow Machine Co., The.
- Knotters—**  
Barber-Colman Co.  
Merrow Machine Co.
- Knitting Lubricants—**  
National Oil Products Co.
- Laundry Machinery—**  
Tolhurst Machine Works.
- Landscape Architect—**  
E. S. Draper.
- Leather Packings—**  
Charles Bond Company  
Chicago Belting Co.  
Edward R. Ladew Co.  
E. F. Houghton & Co.  
Graton & Knight Mfg. Co.
- Leather Loom Pickers—**  
Charles Bond Company  
E. H. Jacobs Mfg. Co.
- Leather Strapping—**  
Charles Bond Company  
Edward R. Ladew Co.  
Graton & Knight Mfg. Co.  
E. F. Houghton & Co.
- Leather Straps—**  
E. H. Jacobs Mfg. Co.
- Liquid Chlorine—**  
Arnold, Hoffman & Co., Inc.  
Mathieson Alkali Works, Inc.
- Logms—**  
Crompton & Knowles Loom Works.  
Draper Corporation.  
Hopedale Mfg. Co.  
Stafford Co., The.
- Loom Beams and Heads—**  
Mossberg Pressed Steel Corp.
- Loom Drop Wires—**  
Crompton & Knowles Loom Works.  
Hopedale Mfg. Co.  
Mossberg Pressed Steel Corp.  
Steel Heddle Mfg. Co.  
R. I. Warp Stop Equipment Co.
- Loom Harness—**  
Atlanta Harness & Reed Mfg. Co.  
Garland Mfg. Co.  
Steel Heddle Mfg. Co.
- Loom Pickers—**  
Jas. H. Billington Co.  
Charles Bond Company  
Edward R. Ladew Co.  
E. H. Jacobs Mfg. Co.  
Garland Mfg. Co.  
Graton & Knight Mfg. Co.
- Loom Reeds—**  
Atlanta Harness & Reed Mfg. Co.  
Greensboro Loom Reed Co.  
High Point Loom Reed & Harness Co.  
Steel Heddle Mfg. Co.
- Loom Supplies—**  
Charles Bond Company  
E. H. Jacobs Mfg. Co.
- Lubricants—**  
Borne, Scrymser & Co.  
E. F. Houghton & Co.  
N. Y. & N. J. Lubricant Co.  
L. Sonneborn Sons, Inc.
- Lubricators—**  
Maicolm H. Smith Co., Inc.
- Lug Straps—**  
Charles Bond Company  
E. H. Jacobs Mfg. Co.
- Machinery Enamel—**  
E. I. du Pont de Nemours & Co., Inc.
- Mangles—**  
H. W. Butterworth & Sons Co.  
Textile Finishing Machinery Co.
- Markers—**  
Kaumagraph Co.  
Merrow Machine Co.
- Measuring and Folding Machines—**  
Cocker Machinery & Foundry Co.  
Curtis & Marble Machine Co.  
Textile Finishing Machinery Co.
- Mergerizing Machinery—**  
Cocker Machinery & Foundry Co.  
H. W. Butterworth & Sons Co.  
Textile Finishing Machinery Co.
- Metal Paint—**  
E. I. du Pont de Nemours & Co., Inc.
- Meters—**  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Mill Architects—**  
—See Architects.
- Mill Lighting—**  
—See Electric Lighting.
- Mill Starches—**  
Arnold, Hoffman & Co., Inc.  
Jas. H. Billington Co.  
Corn Products Refining Co.  
Penick & Ford, Ltd.  
Keefer Starch Co.  
Stein, Hall & Co.
- Mill Supplies—**  
Charles Bond Company  
Dixon Lubricating Saddle Co.  
E. H. Jacobs Mfg. Co.  
Garland Mfg. Co.  
Textile Mill Supply Co.  
Thomas Grate Bar Co.
- Mill White—**  
E. I. du Pont de Nemours & Co., Inc.  
Oliver Johnson & Co.
- Monosulphur Oil—**  
National Oil Products Co.
- Napper Clothing—**  
Wickwire Spencer Steel Co.
- Napper Roll Grinders—**  
B. S. Roy & Son Co.  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse Electric & Mfg. Co.
- Oils—**  
Arnold, Hoffman & Co., Inc.  
E. F. Houghton & Co.  
A. Klipstein & Co.  
National Oil Products Co.  
N. Y. & N. J. Lubricant Co.  
L. Sonneborn Sons, Inc.  
Wolf, Jacques & Co.
- Oil Burners—**  
Scott-Newman Oil Burner Co.
- Oils (Hydroscopic)—**  
National Oil Products Co.
- Oils (Rayon)—**  
National Oil Products Co.
- One-Piece Furnace Linings—**  
Carolina Refractories Co.
- Opening Machinery—**  
H. & B. American Machine Co.  
Saco-Loell Shops.  
Whitin Machine Works.
- Overhaulers—**  
Saco-Loell Shops.
- Overseaming and Overedging Machines—**  
Southern Spindle & Flyer Co.
- Paints—**  
Aluminum Co. of America.  
Oliver Johnson & Co.  
Tripod Paint Co.  
U. S. Gutta Percha Paint Co.
- Patents—**  
Singers & Siggers.
- Perforated Machinery Guards—**  
Wickwire Spencer Steel Co.
- Perforated Metals—**  
Wickwire Spencer Steel Co.
- Picker Gears—**  
Cocker Machinery & Foundry Co.
- Pickers (Leather)—**  
Charles Bond Company  
Edward R. Ladew Co.  
E. F. Houghton & Co.  
E. H. Jacobs Mfg. Co.  
Garland Mfg. Co.  
Graton & Knight Mfg. Co.
- Picker Sticks—**  
Charles Bond Company  
Garland Mfg. Co.
- Piece Dyeing Machinery—**  
H. W. Butterworth & Sons Co.  
Cocker Machinery & Foundry Co.  
Textile Finishing Machinery Co.
- Pipe and Fittings—**  
Parks-Cramer Co.
- Portable Elevators—**  
Link-Belt Co.
- Power Transmission Machinery—**  
Allis-Chalmers Mfg. Co.  
Charles Bond Company  
Hyatt Roller Bearing Co.  
Fafnir Bearing Co.  
Link-Belt Co.
- Morse Chain Co.**  
William Sellers & Co., Inc.  
Wood's, T. B. Sons Co.
- Preparatory Machinery (Cotton)—**  
H. & B. American Machine Co.  
Saco-Loell Shops.  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.
- Pickers and Lappers—**  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.
- Pinboards—**  
Washburn.
- Porcelain Guides and Parts—**  
Page-Madden Co., Inc.
- Presses—**  
Economy Baler Co.  
Saco-Loell Shops.
- Pulleys (Cast Iron)—**  
Charles Bond Company  
William Sellers & Co., Inc.  
Wood's, T. B. Sons Co.
- Pumps—**  
Blackmer Rotary Pump Co.
- Pumps (Boiler Feed; also Centrifugal)—**  
Allis-Chalmers Mfg. Co.  
Fairbanks, Morse & Co.  
Sydnor Pump & Well Co.
- Presses—**  
Collins Bros.
- Quill Boards—**  
Washburn.
- Quillers—**  
Crompton & Knowles Loom Works.  
Universal Winding Co.  
Whitin Machine Works.
- Quill Cleaners—**  
Terrell Machine Co.
- Receptacles—**  
Economy Baler Co.  
Rogers Fibre Co.
- Reels—**  
Cocker Machinery & Foundry Co.  
H. W. Butterworth & Sons Co.
- Rings—**  
Whitinsville Spinning Ring Co.
- Ring Spinning Frames—**  
Fales & Jenks Machine Co.  
H. & B. American Machine Co.  
Textile Finishing Machinery Co.  
Whitin Machine Works.  
Saco-Loell Shops.
- Ring Travelers—**  
Dary Ring Traveler Co.  
National Ring Traveler Co.  
Victor Ring Traveler Co.  
U. S. Ring Traveler Co.
- Rolls—**  
H. W. Butterworth & Sons Co.  
Collins Bros. Machine Co.  
Fales & Jenks Machine Co.  
Rodney Hunt Machine Co.  
The Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.  
Saco-Loell Shops.  
Southern Spindle & Flyer Co.  
Textile Finishing Machinery Co.
- Rolls (Metal)—**  
Rodney Hunt Machine Co.
- Rolls (Rubber)—**  
Rodney Hunt Machine Co.
- Rolls (Wood)—**  
Rodney Hunt Machine Co.  
Washburn.
- Roller Bearings—**  
Charles Bond Company  
Fafnir Bearing Co.  
Hyatt Roller Bearing Co.
- Roving Cans and Boxes—**  
Denison Mfg. Co.  
Rogers Fibre Co.
- Roving Machinery—**  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.  
Saco-Loell Shops.
- Saddles—**  
Dixon Lubricating Saddle Co.
- Sanitary Equipment—**  
Vogel Co., Joseph A.
- Sanitary Fountains—**  
—See Drinking Fountains.
- Scales—**  
Fairbanks, Morse & Co.
- Scallop Machines—**  
Merrow Machine Co.
- Scouring Powders—**  
Bosson & Lane.  
Ford, J. B. Co.  
National Oil Products Co.
- Scrubbing and Cleaning Powders—**  
The Denison Mfg. Co.
- Sesquicarbonate of Soda—**  
Mathieson Alkali Works, Inc.
- Section Beam Heads—**  
Mossberg Pressed Steel Corp.
- Selling Agents—**  
Woodward, Baldwin & Co.  
Deering, Milliken & Co.  
Reeves Bros.
- Selling Agents (Cotton Goods)—**  
Amory, Brown & Co.  
Curran & Barry.  
Deering, Milliken & Co.  
W. H. Langley & Co.  
Leslie, Evans & Co.  
Reeves Bros.  
Wellington, Sears & Co.
- Sewing Machines—**  
Merrow Machine Co.  
Sewing Machines and Supplies—  
Curtis & Marble Machine Co.  
Shafting, Hangers, Etc.  
—See Power Transmission Machinery
- Shafting—**  
Fafnir Bearing Co.  
William Sellers & Co., Inc.  
Wood's T. B. Sons Co.
- Shear Grinders—**  
B. S. Roy & Son Co.
- Shell Rolls—**  
Washburn.
- Shell Stitch Machines—**  
Merrow Machine Co.
- Short Center Drives—**  
T. B. Wood's Sons Co.
- Shuttles—**  
Jas. H. Billington Co.  
David Brown Co.  
Lowell Shuttle Co.  
Draper Corporation.  
Hopedale Mfg. Co.  
Shambow Shuttle Co.  
L. S. Watson Mfg. Co.  
The J. H. Williams Co.  
U. S. Bobbin & Shuttle Co.
- Silk Yarns (Artificial)—**  
American Cellulose & Chemical Mfg. Co.  
Duplan Silk Corp.  
Imperial Rayon Co.  
Industrial Fibre Co.
- Silent Chain Drive—**  
Link-Belt Co.  
Morse Chain Co.
- Singeing Machinery—**  
H. W. Butterworth & Sons Co.  
Textile Finishing Machinery Co.
- Sizing Starches, Gums—**  
Arnold, Hoffman & Co., Inc.  
Arabol Mfg. Co.  
Hart Products Corp.  
L. Sonneborn Sons, Inc.  
Stein, Hall & Co.
- Sizing Compounds—**  
Arnold, Hoffman & Co., Inc.  
Bosson & Lane.  
Corn Products Refining Co.  
Drake Corp.  
General Dyestuff Corp.  
Hart Products Corp.  
A. Klipstein & Co.  
National Oil Products Co.  
United Chemical Products Co.  
John P. Marston & Co.  
Seydel Chemical Co.  
Seydel-Woolley Co.  
L. Sonneborn Sons, Inc.  
Wolf, Jacques & Co.
- Slashers Combs—**  
Easton & Burnham Machine Co.  
T. C. Entwistle Co.  
High Point Loom Reed & Harness Co.  
Steel Heddle Mfg. Co.
- Textile Finishing Machinery Co.**
- Softeners (Cotton)—**  
Arabol Mfg. Co.  
Arnold, Hoffman & Co., Inc.  
Bosson & Lane.  
General Dyestuff Corp.  
E. F. Houghton & Co.  
National Oil Products Co., Inc.  
Seydel Chemical Co., The.  
L. Sonneborn Sons, Inc.  
United Chemical Products Corp.  
U. S. Bobbin & Shuttle Co.  
Wolf, Jacques & Co.
- Softeners—**  
Arnold, Hoffman & Co., Inc.  
E. F. Houghton & Co.  
National Oil Products Co., Inc.  
Seydel-Woolley Co.  
L. Sonneborn Sons Co.
- Skewers—**  
Daid Brown Co.  
Courtney, The Dana S. Co.  
T. C. Entwistle Co.  
Jordan Mfg. Co.  
Walter L. Parker Co.  
U. S. Bobbin & Shuttle Co.
- Slashers and Equipment—**  
Saco-Loell Shops.
- Soaps—**  
Arabol Mfg. Co.  
Arnold, Hoffman & Co., Inc.  
A. Klipstein & Co.  
National Oil Products Co.  
L. Sonneborn Sons, Inc.  
United Chemical Products Co.
- Soda Ash—**  
J. B. Ford Co.  
Mathieson Alkali Works, Inc.
- Softeners (Oil)—**  
Bosson & Lane.  
E. F. Houghton & Co.  
Hart Products Corp.  
National Oil Products Co.  
L. Sonneborn Sons, Inc.
- Spindles—**  
Collins Bros. Machine Co.  
Draper Corporation.  
Easton & Burnham Machine Co.  
Fales & Jenks Machine Co.  
Saco-Loell Shops.  
Whitin Machine Works.  
Southern Spindle & Flyer Co.  
Woonsocket Machine & Press Co., Inc.



## CLASSIFIED LIST OF ADVERTISERS

Spindle Repairs—  
Collins Bros. Co.  
Fournier & Lemoine.  
Fales & Jenks Machine Co.  
Southern Spindle & Flyer Co.

Spinning Frame Saddles—  
Dixon Lubricating Saddle Co.  
Spinning Frame Top Rolls (Wood)—  
Washburn.

Spinning Rings—  
Collins Bros. Machine Co.  
Draper Corporation.  
Fales & Jenks Machine Co.  
Pawtucket Spinning Ring Co.  
Saco-Lowell Shops.  
Whitin Machine Works.  
Whitinsville Spinning Ring Co.

Spools—  
David Brown Co.  
Courtney, The Dana S. Co.  
Jordan Mfg. Co.  
Lestershire Spool & Mfg. Co.  
Steel Heddle Mfg. Co.  
U. S. Bobbin & Shuttle Co.  
Walter L. Parker Co.

Sprockets—  
Cocker Machinery & Foundry Co.  
Sprockets, Silent Chain—  
Link-Belt Co.

Specklers—  
Draper Corporation.  
Easton & Burnham Machine Co.  
Saco-Lowell Shops.  
Whitin Machine Works.

Spinning Tapes—  
American Textile Banding Co.  
Barber Mfg. Co.  
Georgia Webbing & Tape Co.

Squeeze Rolls—  
H. W. Butterworth & Sons Co.  
Cocker Machine & Foundry Co.  
Textile Finishing Machinery Co.

Starch—  
Arnold, Hoffman & Co., Inc.  
Corn Products Refining Co.  
Keever Starch Co.  
Penick & Ford, Ltd.  
Stein, Hall & Co.

Stencil Machines—  
A. J. Bradley Mfg. Co.  
Stencil Papers—  
A. J. Bradley Mfg. Co.

Stripper Cards—  
L. S. Watson Mfg. Co.  
Wickwire Spencer Steel Co.

Switch Boxes—  
Chicago Fuse Mfg. Co.

Tanks—  
H. W. Butterworth & Sons Co.  
Textile Finishing Machinery Co.

Tape—  
Georgia Webbing & Tape Co.

Temperature Regulators—  
American Schaeffer & Budenberg Corp.

Textile Castings—  
H. W. Butterworth & Sons Co.  
Cocker Machinery & Foundry Co.  
Textile Finishing Machinery Co.

Textile Machinery Specialties—  
H. W. Butterworth & Sons Co.  
Cocker Machine & Foundry Co.  
Hyatt Roller Bearing Co.  
Textile Finishing Machinery Co.

Textile Soda—  
J. B. Ford Co.  
Mathieson Alkali Co.

Temples—  
Draper Corporation.  
Hopdale Mfg. Co.  
Textile Apparatus (Fabrics)—  
B. F. Perkins & Son, Inc.  
Henry L. Scott & Co.

Textile Dryers—  
American Moistening Co.

Top Rolls For Spinning Frames—  
Washburn.

Trademarking Machines—  
Curtis & Marble Machine Co.

Transfer Stamps—  
Kaumagraph Co.

Transmission Belts—  
Jas. H. Billington Co.  
Charles Bond Company  
Chicago Belting Co.  
Slip-Not Belting Corp.  
Edward R. Ladew Co.  
E. F. Houghton & Co.  
Graton & Knight Mfg. Co.

Transmission Machinery—  
Allis-Chalmers Mfg. Co.  
Hyatt Roller Bearing Co.  
William Sellers & Co., Inc.  
Wood's T. B. & Sons Co.

Tollets—  
Vogel, Jos. A. Co.

Transmission Silent Chain—  
Link-Belt Co.  
Morse Chain Co.

Trucks (Mill)—  
Rogers Fibre Co.  
W. T. Lane & Bros.

Trucks For Pin Boards—  
Washburn.

Tubes (Paper)—  
Sonoco Products Co.

Turbines (Steam)—  
Allis-Chalmers Mfg. Co.

Twisting Machinery—  
Collins Bros. Machine Co.  
Draper Corporation.  
Fales & Jenks Machine Co.  
Saco-Lowell Shops.  
Whitin Machine Works.

Twisting Tapes—  
Barber Mfg. Co.

Underwear Machines—  
Marrow Machine Co.

Ventilating Apparatus—  
American Moistening Co.  
Parks-Cramer Co.

Ventilating Fans—  
B. F. Perkins & Son, Inc.

Warpers—  
Barber-Colman Co.  
Cocker Machinery & Foundry Co.  
Crompton & Knowles Loom Works.  
Draper Corporation.  
Easton & Burnham Machine Co.  
Saco-Lowell Shops.  
T. C. Entwistle Co.

Warp Dressing—  
Arnold, Hoffman & Co., Inc.  
Boson & Lane.

Draper Corporation.  
Hart Products Corp.  
E. F. Houghton & Co.  
National Oil Products Co.  
Seydel-Woolley Co.  
L. Sonneborn Sons Co.

Warp Stop Motion—  
Draper Corp.  
Hopdale Mfg. Co.  
R. I. Warp Stop Equipment Co.

Warp Tying Machinery—  
Barber-Colman Co.

Warper Shell—  
Cocker Machinery & Foundry Co.

Washers (Fibre)—  
Rogers Fibre Co.

Waste Reclaiming Machinery—  
Saco-Lowell Shops.  
Whitin Machine Works.  
Woonsocket Machine & Press Co., Inc.

Waste Presses—  
Economy Baler Co.

Water Controlling Apparatus—  
Rodney Hunt Machine Co.

Water Wheels—  
Allis-Chalmers Mfg. Co.

Weighting Compounds—  
Arabol Mfg. Co.

Bosson & Lane.  
General Dyestuff Corp.  
Hart Products Corp.  
Marston, Jno. P.  
National Oil Products Co.  
Jacques Wolf & Co.  
Seydel-Woolley Co.  
L. Sonneborn Sons, Inc.

Well Drillers—  
Sydnor Pump and Well Co.

Whizzers—  
Tolhurst Machine Works.

Winders—  
Easton & Burnham Machine Co.

Saco-Lowell Shops.  
Universal Winding Co.

Windows—  
Carrier Engineering Corp.  
Parks-Cramer Co.

Window Guards—  
Wickwire Spencer Steel Co.

Wire Partitions—  
Wickwire Spencer Steel Co.

Yardage Clocks—  
T. C. Entwistle Co.

Yarns—  
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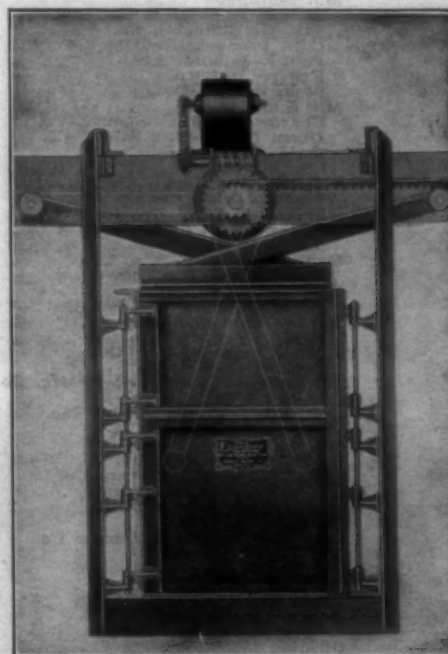
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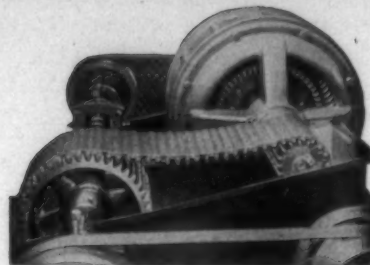
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